



# International Abstract of Surgery

SUPPLEMENTARY TO

Surgery, Gynecology and Obstetrics

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JANUARY 1934

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*Supplementary to*  
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 Petazz G 66  
 Pereira R F 26  
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 Polizer G 40  
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 Pralken J R 58  
 Raba witz H M 67  
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 Rad C D 40  
 Rodge T R 7  
 R l nua S 57  
 Rose D K 54  
 Pubentell S 46  
 Russ S 4  
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 Sabot er A 41  
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 Scott G M 4  
 Sedacz k E 4  
 Semb C  
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 Slocum G 27  
 Spea F G 4  
 Sp ize W 3  
 Stahl J 53  
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 Str nbeck J P 62  
 Taylor A C 6  
 Th mas J W T 27  
 Thompson J E 64  
 Torelli C 20  
 Tra na Rao C 66  
 Tshwetadz J J 57  
 Vas leff N 45  
 V mtre P 34  
 Wagner t 34  
 Wake P M 60  
 Wass leff A A 60  
 W ber L A 61  
 Weurbe g J V 33  
 Whitman R 64  
 W lkie D P D 42  
 Wilson H M 54  
 Wolpers C 32  
 Wood W O 42  
 Wu P P T 30

# INTERNATIONAL ABSTRACT OF SURGERY

JANUARY 1934

## COLLECTIVE REVIEW

## THE RECENT LITERATURE ON MALIGNANT TUMORS OF THE UTERUS

CFORGE H GARDNER MD FACS AND GEORGE C FINOLA MD CHICAGO  
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## CANCER OF THE CERVIX

AT the 1932 Congress of the American College of Surgeons Franklin H. Martin (1,8) sounded the following keynote for an enthusiastic symposium on cancer. Carcinoma is curable by the use of well known and established methods of treatment. Martin is convinced that one third of the 150,000 cancer deaths per year in the United States and Canada would be avoided if all cases of cancer could be diagnosed early and treated promptly. He appreciates that ethical publicity on cancer cures is necessary to raise the morale both of the laity and of the profession. The August 19, 1933 issue of *Collier's Weekly* says: "The American College of Surgeons has in its files today authenticated record of 8,840 patients who have been definitely cured of cancer. Many of them did not begin treatment until they were past the first stages of the disease. Martin further urges that all persons with cancer, even those with apparently extensive lesions, be given the benefit of treatment. Since the progress of the disease may be retarded or the growth may even be destroyed and a complete cure obtained. Croesen (48) feel encouraged about the situation because a considerable number of women including those not treated until the cervical growth has reached an advanced stage are cured by the treatment available today and thus complicated without the high mortality that attended the treatment necessary to cure even early cases in former times.

Heyman (122) prefers to express the results obtained from the treatment of cancer of the cervix in terms of absolute five year cure i.e. the number of women who are alive and free from recurrence five years after treatment in proportion to the total number with the disease who applied for care. Accurate follow up is essential because every patient who does not return for examination must be considered dead from cancer. Bloodgood (19) agrees that the absolute not the relative number or percentage of cures is important. Newell (196) finds that regardless of the treatment employed clinics the world over report the incidence of absolute five year cure at from 20 to 30 per cent. The incidence of such cure reported by individual gynecologists is as follows: Adler (12) 20.8 per cent. Bonney (24) 25.4 per cent. Haupt (113) 29.1 per cent. Heyman (121, 122) 20.6 per cent. Holzbach (131) 35.5 per cent. Kamnicker (137) 27.9 per cent. Lacassagne (163) 6 per cent. Lynch (172) 20.3 per cent. Newell (196) 22.3 per cent. Phillip (106) 6.5 per cent. Volz (215, 216, 277, 278) 24 per cent. and Ward (282) 25.0 per cent.

According to Schiller (36) only earlier diagnosis and more prompt treatment will greatly improve the results in cervical cancer (caves 95) recognized that cancer of the cervix is frequently cured by the means now at our disposal the likelihood of cure being directly proportional to the timeliness of the attack since every cancer has es

# INTERNATIONAL ABSTRACT OF SURGERY

through a stage when theoretically it is curable. According to Floodgood (19) the important means by which cures can be increased are (1) education of women and physicians with regard to the protective value of periodic pelvic examinations which would permit the diagnosis of cancer early before symptoms appear and at a time when the lesion is amenable to curative measures and (2) training of skilled radiologists to meet the increasing demands of cancer clinics. Refinements in the technique of administering present day therapy such as the coincident surgical exposure and radium treatment suggested by Curtis (52) will greatly increase its scope of usefulness and efficacy.

## PREVENTION

Cancer of the cervix is most common in multiparous women and lacerations of the cervix along with the commonly associated inflammatory lesions are generally considered to be its forerunners. Most of those who advocate periodic pelvic examinations advise also the repair of lacerations and the eradication of chronic cervicitis erosions eversion and leucoplakia as prophylaxis against cancer.

**LACERATIONS** Bursey (34) Macfarlane and Howe (175) Massey (181) and Procter (18) urge routine inspection of the cervix at the conclusion of the third stage of labor and recommend immediate repair of lacerations. As lacerations with associated infection are a common source of chronic leucorrhoeal discharge it is possible that obstetricians have been lax in searching for lacerations of the cervix and making primary repairs. Beall (13) Procter (118) Regaud (219) and others are convinced that infection and inflammation are more important than lacerations and scars as factors predisposing to the development of cancer. Wamock (187) claims that no definite proof has yet been offered to show that cervical cancer begins primarily in an old laceration.

**CERVICITIS, EROSION AND EVERSION.** People (203) advocates repair of cervical tears and eradication of unhealthy areas in the cervix because on questioning his patients with cervical cancer he learned that none of them had received such treatment. He cites interesting experiences reported by others. Of 1700 cervixes cauterized by Bartlett and Smith cancer developed subsequently in none of 5962 cervixes repaired or cauterized by Pemberton. Cancer developed in only 5 and of 2985 cases in which cervical tissue was excised by Huggins cancer of the cervix was subsequently reported in none. Procter (18) says that eradication of disease in the cervix

means prevention of cancer this is open to question.

Beall (13) prefers cautery to trachelorrhaphy as a prophylactic measure. Bursey (34) and Procter (118) use the cautery for erosions and minor lacerations they reserve surgery for gross abnormal cervix. Crossen (47, 49) recommends prompt removal of areas of chronic irritation particularly during the latter part of the child bearing period. Hinselmann (13, 124) practices extirpation of unhealthy areas disclosed by the colposcope. Macfarlane and Howe (175) Phaneuf (203) Schmitz (237) and many others urge appropriate treatment of all cervical lesions.

In this connection it is rather disturbing that Fusco (80, 81) had only light success in producing cancer in experimental animals by irritating the cervix with coal tar. Neither could he confirm the contention of Choh that previous bilateral oophorectomy renders animals more susceptible to the development of uterine cancer.

**CERVICAL STRUCTURE** Curtis (57) writes I strongly suspect that structural obstructions of the cervix may sometimes be a factor in the etiology of endocervical cancer. It would appear that cervical structures are of more frequent occurrence than most gynecologists have realized and that they often give rise to symptoms. The suggestion that they are of etiological significance in the development of cancer is worthy of consideration.

**LEUCOPLAKIA OF THE CERVIX.** Martzloff (180) has found that leucoplakia develops most frequently at the transition zone between squamous and columnar epithelium. Grossly the plaques vary in size but are usually less than 5 mm in diameter. They are white or pearl white and slightly elevated. On microscopic examination the epithelium of the leucoplakic zone appears more compact but it is not always thickened. The epidermal papillae are more prominent and there is hyperplasia of the basal layer. Often a subepithelial round cell infiltration is found and the transition from normal epithelium to leucoplakia is quite abrupt and distinct. Sometimes cell changes such as are ordinarily considered significant of a malignant lesion are seen but there is no invasion of tissues.

Martzloff believes that the term precancerous if ever permissible might be applied to leucoplakia of the cervix but that the evidence is insufficient to warrant the conclusion that leucoplakia provides the basis for the subsequent development of cervical cancer.

Kretschmer (158) recognizes simple leucoplakia as a benign lesion but believes that cancer may develop in it after a period of years. Leucoplakia causes no symptoms; it is found during routine examination and the colposcope is helpful in its recognition. To Kretschmer radium radiation is the most satisfactory method of treatment. Haselehorst (112) reports 6 cases in which the colposcope was not necessary to diagnose the lesion; in 2 an early associated carcinoma was found. Probably amputation of the cervix is adequate treatment for these incipient cases.

Touraine (264) demonstrated syphilis to be the cause in two thirds of his 29 cases of leucoplakia of the cervix; in 40 per cent an epithelioma developed later.

**CANCER IN A CERVICAL STUMP.** Any comment on cancer appearing in a cervical stump calls forth a violent protest from the advocates of routine complete (total) hysterectomy; they contend that such cancers are avoidable. Many so-called cancers in a stump already existed but were unrecognized at the time of the supravaginal hysterectomy. Iresini (217) suggests that a cancer in the stump should be considered a new rather than a pre-existing lesion if it appears later than eighteen months after the subtotal operation. Iorgue (75) places the dividing line at two years.

Bends (17) treated 7 stump cancers in a series of 515 cervical neoplasms and Gosset and Wallon (93) found 13 among 227 cancers of the cervix. Mayo (183) reports 99 cancers in the stump observed during a period of twenty years; 55 per cent of them were first recognized three years or more after the supracervical hysterectomy. Spencer (247) says that the large cancer clinics of Europe estimate that 3 per cent of their cervical cancers occur in a stump.

Iorgue (75) thinks that 1 per cent of all women subjected to supravaginal hysterectomy for fibroids will later develop cancer of the cervix. Lokai estimated the incidence of cervical cancer after subtotal hysterectomy at 2 per cent. Iresini (217) at about 0.5 per cent. Lesauvage at 0.54 per cent. Hartman at 0.2 per cent and Hochman at 0.27 per cent. Spencer (247) makes the astonishing assertion that cancer 100 times more likely to develop in a cervical stump than in a cervix to which the corpus is still attached.

Mayo (183) reports mortality statistics in operations for uterine fibroid. In 1055 supravaginal hysterectomies the mortality was 1.2 per cent and in 1555 complete hysterectomies 1.8 per cent. The slight difference may be explained by the fact that complete hysterectomy is usually

performed on patients who are more seriously ill than those subjected to the supravaginal hysterectomy. Spencer (247) contends that there is practically no difference in the death rate after complete and subtotal hysterectomy for fibroid when the operations are performed by competent surgeons. He found sarcomatous changes in 6.6 per cent of fibroids previously unrecognized cancer of the cervix was discovered in 2 per cent and unrecognized cancer of the corpus in 1 per cent of 900 myomatous uteri.

If one is convinced that more patients will die as a result of the complete operation than from cancer arising in a stump, Mayo (183) recommends caring for the cervix ten or twelve days later either by vaginal removal, enucleation of the canal or destruction of the endocervix with the electric cautery. Beall (13) advises against coring out the endocervix at the time of the supravaginal hysterectomy. Mollino and Boero (189) recommend vaginal removal of the stump or electrocoagulation of the canal. Iresini (17) emphasizes that a supravaginal hysterectomy should not be performed in preference to a complete hysterectomy until the cervix has been carefully studied and co-existent carcinoma is definitely ruled out.

Bends (17) regards radium radiation followed by removal as the best treatment for cancer of the stump. Iorgue (75) finds that treatment is less difficult when the entire uterus is present.

#### PATHOLOGY

**APPEARANCE OF EARLIEST CANCERS.** Burger (32) reports an early cancer of the cervix discovered during a routine pelvic examination; it was a 0.75 cm. blanched area which looked like powdered sugar. Schiller (236) describes such miniature cancers as small white opaque and sometimes wrinkled areas. As he finds it impossible to differentiate them grossly from hyperkeratotic leucoplakia, he relies on the microscopic finding for a final diagnosis. Graves (95) believes that the life cycle of a cervical cancer is about twelve years; that it passes through an extended irritative stage of chronic cervicitis and that there is a shorter but protracted phase of clinical latency when the lesion may be discovered with the aid of biopsy or may be found accidentally in tissue removed during a trachelorhaphy. Schiller (236) has observed that cancer usually starts in the unbroken squamous epithelium of the portio near the external os and tends to spread laterally and superficially without invading deeper tissues. On microscopic examination he finds a distinct line of demarcation

between normal and cancerous tissue in addition to many irregularly shaped cells with polymorphic and atypical nuclei. Often he has seen large nuclei surrounded by smaller ones and dark nuclei next to light ones. Usually a few giant cells are present. Hyperchromatism and nuclear figures are most significant in the microscopic diagnosis of cancer.

**INVOLVEMENT OF THE VAGINA.** According to Keller (149-150) cancer of the cervix eventually involves the vagina in every untreated case. This involvement occurs chiefly by direct extension to adjacent tissues; consequently the lower vagina is involved only in late stages. Lymphatic dissemination is of lesser import but seems to occur more frequently after X-ray and radium treatments. (This last statement is not accepted by most observers.) It is imperative that an operation for cancer of the cervix include removal of a generous cuff of adjacent vagina. Vaginal nodules of cancer appearing after operation probably were present and unrecognized at the time of the operation.

In this connection we wish to interpolate some other observation on both primary and secondary carcinoma of the vagina. Roessler (25) has observed metastatic cancer of the vagina from adenocarcinoma of the corpus uteri and adenocarcinoma of the large bowel. De Buoi (56) reported a case of primary cancer of the vagina which began in the posterior wall but said that the lesion usually arises in the anterior wall. Ortmann (200) reported a fatal vaginal cancer in an infant one year old and Scheffey and Crawford (33) observed an adenocarcinoma of the cervix in a child of twenty-two months. Ottow (201) saw 2 curable cancers of the vagina about a year after operations supposedly for fibroids. Strachan (252-253) reported 2 primary adenocarcinomas involving the posterior wall which are quite rare. Philip (207-208) obtained cures in 15 per cent of 83 cancers of the vagina.

**DISTANT METASTASES.** Cavaglia (40) observed a supraclavicular metastasis in a case of far advanced cancer of the cervix and believes that the dissemination must have occurred through the thoracic duct. Gunsett and Girardin (101-102) have seen 2 subcutaneous nodules in treated cases and interpret such lesions as evidence of retrograde metastasis. Philip (200-201) ascribes the increased incidence of bone metastases to the fact that patients live longer after present day methods of treatment. Rosh (226) saw only 1 bone metastasis in 3 patients at the Bellevue Hospital, New York, but Ford reported 14 from the Mayo Clinic. Meyer (183) reports a case of skin

metastases. Few others have been described. Jones (134) contends that radiation therapy does not lead to bizarre metastases but keeps patients alive long enough to permit the development of secondary growths. Warren (235-236) who studied 10 cases at autopsy, recognizes a close relationship between the degree of malignancy as estimated from the histological appearance of the primary tumor and the incidence of metastases. Most of Warren's patients died from impairment of renal function.

**PROLAPSE.** Hogler (130) found only 5 cases of cervical cancer in prolapsed uteri among 1104 gynecological admissions. Guthrie and Bache (104) and Hinselmann (125) each report an additional case. Hogler suggests that dryness of the tissues and consequent poor nutrition may be a factor, but to Guthrie and Bache the absence of acid vaginal secretion seems of more importance in this infrequent association of cervical cancer and a prolapsed uterus.

**CERVICAL POLYPS.** Frankl and Ringer (8) studied 318 polyps microscopically and followed most of the patients for at least six months to check the accuracy of their diagnoses. They believe it is possible to make a certain diagnosis of benign or malignant polyp from the histological picture of the lesion. In 1 per cent of their cases the polyp was complicated by cancer of the cervix; consequently they caution gynecologists to refrain from assuming that a polyp is the only lesion present and urge careful study of the entire genital tract whenever a woman is subjected to pelvic examination.

#### DIAGNOSIS

Gynecologists and radiotherapists continuously emphasize the importance of earlier diagnosis and more prompt treatment in the cure of cancer of the cervix. As the cause of cervical cancer is not known, efforts directed toward its prevention are probably futile. New treatments worthy of consideration may not be discovered for many years. Improvements in present day therapy—surgery and radium and X-ray radiation—will probably be restricted chiefly to refinements in the technique of applying radium or of using the deep X-rays. To obtain a great number of cures or arrest the growth for five years and longer, treatment must be started at an early date, i.e., when the growth is limited to the cervix and is amenable to the curative measures now at our disposal.

Hamant and Koening (108-109) appreciate the progress that has been made in the treatment of cervical cancer but realize that most patients report for care too late to be cured—usually after

symptoms have been present for at least six months and the cancer has spread to the parametria, vagina, bladder and rectum. They summarize the causes of the delay and the methods to prevent it as follows:

#### A Causes of delay in starting treatment

##### 1 The patient

- a Does not know the symptoms of cancer and attributes the bleeding to the change of life. She is not alarmed until she notes pain, weakness or loss of weight.
- b Seeks advice from friends, neighbors, quacks, Christian Scientists or followers of Coue.
- c Consults a mercenary pharmacist who sells a remedy and thereby delays examination.
- d Hesitates to see a physician for fear she may be told she has cancer or that she must go to a hospital.
- e Wishes to avoid loss of time from her work.

##### 2 The physician

- a Fails to examine the patient or does not study her carefully. Bursey (34) insists that every complete physical examination of a woman should include a pelvic examination and speculum study of the cervix. Baumert (12) urges careful examination of every woman with pelvic symptoms. Jeffreys (133) quotes Davis to the effect that the examination of a woman is not complete unless the cervix has been inspected.
- b Because of poor training cannot recognize cancer, misses the diagnosis, gives wrong advice and begins inappropriate treatment.

##### 3 The midwife. Is often meddlesome and free with suggestions about conditions of which she knows practically nothing.

#### B Ways and means of avoiding delays

- 1 Education of the public through public lectures and conferences, the movies, newspapers and the radio. Schröder (239) suggests that the symptoms of cancer be taught in the public schools.
  - a Instruction regarding the function and physiology of the genital organs. Also urged by Forgue (76).
  - b Proof that cancer is curable but only by surgery or radiation therapy.
  - c Emphasis on the significance of vaginal bleeding and encouragement of

women to report to their physician for examination as soon as bleeding occurs. Geist and Matus (84) appreciate that bleeding after the menopause is usually due to malignancy, but in 42 per cent of 182 cases they found that the cause was a benign condition in the cervix, corpus or ovary. These cases must be followed most attentively as malignancy may become apparent later even when it was not discovered at the original examination.

##### d Discouragement of the prevalent custom of waiting until there is pain before consulting a physician.

##### e The urging of periodic pelvic examinations as a necessary safeguard to permit early diagnosis of cancer.

#### 2 The physician. Alvarez (5) urges that the general practitioner be impressed with the possibilities for cure and relief from distress by the methods of treatment in vogue today.

- a Must make a careful pelvic examination before prescribing. Schmitz (237) urges trained gynecologists to teach general practitioners what constitutes an unhealthy cervix and which lesions require treatment.
- b May find the colposcope and Schiller test helpful.

##### c Should perform more biopsies when in doubt. They probably do not harm the patient and usually clinch the diagnosis.

##### d Ought to keep in touch with the progress and new developments in the larger cancer clinics.

#### 3 Medical students should be thoroughly instructed with regard to the signs and symptoms of uterine cancer.

#### 4 Midwives should be restricted to midwifery and compelled to refer all cases requiring other treatment to competent physicians.

#### 5 Pharmacists should not prescribe but should urge women to go to their physicians for examination.

#### 6 Periodic pelvic examinations by trained gynecologists are excellent safeguards against the extensive development of an asymptomatic cancer. (It is interesting that the wives of men who have been circumcised are less likely to develop cancer of the cervix.)

- 7 Prophylactic eradication of benign cervical lesions may prevent many cervical cancers
- 8 Cancer clinics will probably become excellent institutions but can be no better than their personnel

**PERIODIC PELVIC EXAMINATIONS** Physicians in general seem to be enthusiastic regarding a concerted movement to educate women to the value of regular pelvic examinations. Some advise yearly visits but others believe that 2 examinations a year are preferable. Bloodgood (19) Bursey (34) Macfarlane and Howe (175) Martin (178) Massey (181) Peple (203) Phaneuf (205) Procter (218) Remmelts (222) Ries (23) and others urge these examinations particularly for women who have sustained cervical trauma and suggest that they should be continued from the time of that injury until after the menopause. Many asymptomatic early cancers would be treated and cured if all women were examined regularly but regular examinations would not completely solve the problem of early diagnosis as relatively few physicians are capable of recognizing cancer of the cervix in its early stages. According to Weaver (287) the problem would be simplified if every woman could be convinced that cancer of the cervix at an early stage is curable in from 64 to 80 per cent of cases and that a thorough pelvic examination by a competent gynecologist once a year will reveal the early signs and evidences of cancer.

**THE COLPOSCOPE** Hinselmann (123, 124) is recognized as the world's most expert colposcopist and the most ardent advocate of the use of the colposcope for the early diagnosis of cancer. He believes (126) that lesions (2 mm in diameter) can be recognized with this instrument. Ries (223) is convinced that the colposcope is of assistance in the identification of lesions of the cervix which cannot be seen with the naked eye. Emmet (65) and Remmelts (22) have found the colposcope invaluable for the recognition of leucoplakia of the cervix. Graves (95) appreciated the value of the colposcope as a diagnostic aid but believed that the instrument is too expensive and too complicated for the average physician to become adept in its use.

**SCHILLER TEST** Schuller (13, 6) suggests painting the cervix with an iodine solution (2 gm. of iodine and 2 gm. of potassium iodide in 300 ccm. of water) to demonstrate lesions which otherwise might be overlooked. Because of the glycogen content of the surface epithelium normal vaginal mucosa stains dark brown in from thirty second to a minute. Failure to stain may

indicate the presence of an early cancer hyperkeratosis or trauma. Tissue should be removed for biopsy from all unstained areas but not from eroded portions of the cervix. Histological study is necessary to determine the significance of a given area which fails to take the stain. Schuller suggests that every woman should be subjected to this test several times a year. Graves (95) regarded the Schiller test as indispensable in a careful search for early carcinoma. He found that erosions stain faintly and are pink, that ulcers and ectropion do not stain at all, that some areas of chronic cervicitis stain only faintly, that trauma may destroy the surface glycogen bearing cells so that staining does not occur, that granulation are not stained and that in prolapsus staining is prevented by hyperkeratosis. Hinselmann (16) suggests that the Schiller test may help to eliminate some of the inaccuracies in diagnosis which arise from the use of the colposcope.

**BIOPSY** Doderlein (57) rightfully insists that every clinical impression of cancer must be substantiated by histological proof before the diagnosis is made. Jeffreys (133) recommend biopsy of separate areas from any suspicious lesion of the cervix. Heal (115) Jones (134) and Thomas (260) urge biopsy whenever there is a question relative to the nature of a cervical lesion. Jones has not seen any unfavorable effects from biopsy and contend that the procedure will save far more patients than it can possibly harm. Careful consideration of the history, careful manual examination and inspection of the cervix under ideal conditions of exposure and light should lead to an accurate diagnosis in fully 98 per cent of all cancer cases. In the remainder the nature of the lesion will be disclosed by biopsy.

**SEROLOGICAL TESTS AND BLOOD CHEMISTRY** Natale (19) found that the Catelli-Piazza reaction is of no value in the differential diagnosis of cancer. Bolaffi (2) believes that it may be helpful but is far from a specific reaction.

Bolaffi (30, 31) attributes the hyperglycemia observed in cases of cancer to unrelated factors and does not consider it the result of a specific influence exerted by carcinomatous tissues.

Marta (177) found the pH of the blood lowered in cancer and unchanged in other gynecological disorders. Krünerich (159) has noticed an alkalosis in the early stages of carcinoma which changes to acidosis as the disease progresses. In advanced genital carcinoma he has found a decided tendency toward acidosis.

In tests of liver function by the trypanocidal reaction Fuhrer, Kothermundt and Wiesbader

(66) found a slight decrease in this function in women with cancer of the reproductive organs

#### PROGNOSIS

**EXTENT OF THE LESION** *The chief factor in determining the prognosis in any case of carcinoma of the cervix is the extent of the local involvement.* All other considerations are of secondary importance. Most gynecologists have accepted the clinical classification adopted by the Cancer Committee of the League of Nations viz.

Group 1 Earliest lesions limited to the cervix free mobility of the uterus

Group 2 Invasion of vaginal wall slight involvement of the paracervical and parametrial tissues uterus mobile

Group 3 Marked infiltration of the paracervical and parametrial tissues uterus fixed

Group 4 Invasion of adjacent viscera with or without fistulae May be distant metastases

The prognosis is most favorable of course in cases of Group 1 but unfortunately only a small percentage of cases coming for treatment fall in this group. It is highly unsatisfactory to attempt a comparison of results from different methods of treatment in any of these several clinical groups because of the human element which plays a considerable rôle in a classification dependent solely on the findings of palpation. The most reliable and informative cure rate reported by any clinic is its percentage of absolute five year cures.

**OBESITY** Lund (171) states that the incidence of cure of epidermoid cancer of the cervix is highest in women of average weight the prognosis being twice as good in the cases of such women as in those of women who are obese or very thin.

**HISTOLOGY** Kamnicker (136) expresses the opinion of most gynecologists when he states that the prognosis depends on the extent of the lesion rather than on the histology of its component cells. Keene (146) believes that the grading of cancers according to cell type is not of great prognostic value. Jones (134) comments on the variable histological picture in different portions of the tumor and does not consider cell type of any assistance in the determination of the indications for treatment. Laborde and Wickham (163) observed that radium is equally effective for all histological types of cervical cancer and Kamnicker (136) makes the same claim for vaginal hysterectomy. Kamnicker (137) contends that the histological type of cells in the original growth is of little import in the determination of the frequency location or time of appearance of recurrences.

Toyoshima (265) believes that a preponderance of eosinophiles in the stroma of cervical cancer indicates a better prognosis that marked plasma cell infiltration denotes a poorer prognosis and that invasion is more extensive and the results after operation are less favorable in cases with slight cellular infiltration than in those with a rich infiltration of the stroma.

**INFECTION** All cancers of the cervix are infected many of them by virulent organisms. Heyman (122) and others stress the importance of reducing or eradicating the infection before beginning treatment of the cancer to increase the number of cures reduce the primary mortality and decrease the incidence of postoperative or post-radiation morbidity. Some of the methods suggested are pre-operative radiation by Bruner (28) the use of vaccines by Cudec (98) and Henrotay (117, 118) electrocoagulation by Bernard (18) Cerney (85) Guedes (98) and Mikulicz Radecki (186) and cautery by Bonfield (3) Peple (201) and Petit Dutailly (204).

**ASSOCIATED PREGNANCY** Keller (151) recounts the difficulties that may be encountered in deciding whether a cervical lesion associated with pregnancy is benign or malignant. After delivery the character of the lesion is usually apparent.

Stockl (250) found only 8 cancers of the cervix in 15,000 pregnant women. All occurred in multiparae and were in an operable stage. There was nothing about the course of the lesion in these cases to warrant the conclusion that the pregnancy exercised either a retarding or a stimulating effect upon it. Bleeding begins early and tends to be free and as expectant mothers recognize vaginal bleeding as a sign of trouble they report for examination immediately. Phillip (207) agrees that complicating pregnancy has no effect on the results of the treatment of a cancer of the cervix. Kamnicker (137) cured 5 of his 6 pregnant patients with cervical cancer.

Andradias and Mahon (6) encountered a polyoid cancer of the cervix which caused hemorrhage at the onset of labor and had been diagnosed as placenta previa.

Tracy (266) was able to find reports of only 6 cancers of the cervix complicated by ectopic pregnancy.

Wickham and Toulet (202) treated a cancer of the cervix with 3,200 mc of radium. Thirteen months later the patient was delivered at term. The child is now three years old and apparently normal and the mother is free from recurrence. Phillip (209) has seen subsequent



pregnancy in 2 women cured of genital carcinoma by radiation therapy

#### TREATMENT

**CANCER CLINICS** All over the world there is a concerted movement to establish cancer clinics where patient will receive prompt and efficient treatment by specialists in cancer therapy. The American College of Surgeons is pioneering this ideal in the United States and Canada and has stimulated the establishment of cancer clinics in many of our leading hospitals and universities.

Frankenstein (77) favors the establishment of cancer clinics because of the complete and accurate records which would be kept by them and because their careful follow up of patients will furnish authentic information regarding the exact status of every type of lesion at all stages of treatment. Bauld (11) is enthusiastic because the clinics will serve as an important adjunct in early diagnosis and treatment. Schroder (239) realizes that treatments would be more efficacious if given only by trained specialists in cancer therapy and suggests that every physician be required to register his cancer patients in a cancer clinic so that they may have the benefit of an expert's counsel. Maclean (1,0) believes that those who treat cancer should be surgically trained and radiologically sound.

**RADIUM RADIATIO VERSUS OPERATION** In recent years the verbal battle between various clinics regarding the relative merits of surgery and radium radiation in the treatment of cancer of the cervix has lost much of its former fervor. Today Regaud and Faure seem most intent on keeping this feud alive. It is generally agreed that operation should be considered only for early cases in which the lesion is limited to the cervix and the uterus is freely movable but a few surgeons still operate after there has been extension to the parametria providing there is no fixation of the uterus. Whether one uses surgery or radiation therapy in these earliest cases depends largely on his skill, his personal attitude toward cancer therapy and the problems presented by the particular case. Hartman (110-111) cured 75 per cent of his earliest cases with surgery and 63 per cent with radium. The 771 major mortality was 4 per cent in 49 surgically treated cases and 2 per cent in 305 cases given only radiation therapy. For more extensive lesions radiation therapy is unanimously accepted as the only worthwhile procedure. It is agreed also that every patient regardless of the apparent extent of her cancer can be benefited by appropriate therapy.

Auer (8) states that in early cases treated at the Barnard Free Skin and Cancer Hospital St. Louis radical surgery has proved superior to radium therapy as it has been followed by a greater permanence of cure after five years. Gosset (92) prefers radium therapy because it is more benign than surgery, its application is simple and its primary mortality is lower. Faure (67-68-69-70-71) is certain that in early cases radical abdominal surgery is preferable to radium therapy but Regaud (220) after comparing his own results following radium therapy with those of Faure after operation concluded that radium therapy is preferable and operation should be abandoned. Crossen (47-48-49) recommends deep X-ray and radium therapy for all except extremely early lesions. Haupt (123) believe that only early cases should be operated on and later should receive radiation therapy. Leveit, Herrenschnmidt and Godard (170) denounce operation even for early favorable cases believing that it involves too much risk for the patient. Lynch (17) cured all of his cases belonging to Group 1 by radiation alone. Volz (76) quotes Doderlein to the effect that radiological treatment does everything which radical surgery can do and is less drastic and less dangerous.

Phillip (97) expresses a commonsense attitude when he views radium therapy and surgery not as competitors but as supplementary methods of treatment. Petit Dutaillis (204) says that the problem of the treatment of cancer of the cervix is no longer a choice between radium therapy and surgery but a choice between radium therapy alone and radium therapy combined with surgery.

**RADIUM** There are 3 recognized methods of treating cancer of the cervix—radiation surgery and radiation combined with surgery. Numerous modifications have been suggested and variations in the technique of treatment are continuously being advised. According to an editorial comment (63) in the *British Journal of Radiology* improvements in the result of the treatment of cervical cancer will come not from operative procedures alone in which the technique is already excellent but from radiation therapy which has not yet passed the experimental stage.

Radium treatment is administered locally through all possible portals and in sufficient dosage to eradicate the cancer without serious damage to adjacent structures. It is given in the form of (1) large doses (from 3,000 to 4,500 mc) delivered in a period of hours, (2) massive doses (from 6,000 to 8,000 mc) delivered continuously over a period of days—French tech-

nique—and (3) divided doses (from 1 200 to 6 000 mc per dose) delivered at intervals ranging from several days to several weeks.

Jones (134) very sensibly remarks that the dosage of radium cannot be standardized the dose and technique must vary with the character location and extent of the given lesion. Simpson (243) commenting on the present day methods of applying radium criticizes the French school which applies a small quantity of radium from 50 to 70 m continuously for a number of days because he fears that the trauma is dangerous and a marked inflammatory reaction is almost inevitable. He believes that metastasis is favored by the manipulation of searching for and dilating the cervix to insert a relatively large bolus of radium into the uterus. He contends that repeatedly withdrawing and re inserting radium in the cervical canal add tremendously to the danger of subsequent infection. Simpson (243) is convinced that 5 000 mc is more than twice the amount of radiation that can be used in the cervix safely and has adopted a technique of divided doses delivered through a maximum number of portals with minimal trauma.

Kleine (155) believes that both syphilis and cancer should be treated actively when they co-exist but that in the presence of syphilis radium radiation should be given in smaller doses than usual because the previous damage by the syphilis makes the tissues less resistant to radiation.

Brooksher (7) enumerates the following contra indications to the local use of radium for cancer of the cervix: (1) emaciation and cachexia; (2) marked anemia (less than 3 000 000 erythrocytes and a hemoglobin below 40 per cent); (3) hydronephrosis or pyonephrosis; (4) fistula; (5) pelvic inflammatory disease; and (6) extensive pelvic involvement by the cancer. Kaplan (142) prefers radium for local or surface application for intratumoral treatments and as a distant pack if large quantities are available.

*Large dosage of radium delivered quickly.* For years Crossen (47 48 49) has given a maximum dose of radium radiation at the beginning of treatment. He follows this up with deep X ray therapy and reradiates any local recurrences. This treatment yielded an absolute five year cure in 21 per cent of 108 patients but Crossen is particularly gratified that 11 women who came to him with extensive cancer of the cervix are now living and well from six to ten years after the treatment. Burnam (33) from the Howard A. Kelly Clinic where radon and X ray are used reports the incidence of absolute cure in all cases as 15.96 per cent in operable cases as 54.73

per cent in cases in which the radiation was given for prophylaxis as 41.66 per cent in inoperable cases as 11.35 per cent and in cases of recurrent lesions as 11.25 per cent. Doderlein (57) prefers this type of treatment to the technique of the French school. He fears that the latter is less effective and more harmful. Jones (134) using from 3 600 to 4 000 mc and following up with deep X ray therapy has obtained an absolute cure in 25 per cent of cases. Ward (282) advises an initial dose of from 2 400 to 4 200 mc and give subsequent radium treatments according to the reaction to the first treatment. He is particularly insistent and successful in the follow up of patients and urges continuous supervision of their progress. He uses high voltage X ray radiation as an adjunct to radium and reradiates whenever necessary for recurrences. Frequently he gives transfusions of blood before or after the irradiation. With this technique he has obtained an absolute cure in 25.9 per cent of cases.

*Divided doses.* Simpson (243) has devised a technique which he hopes will materially reduce the dangers of traumatism infection metastasis and overdosage. He urges gentleness in examination call attention to the futility of trying to clean up the vagina by douches prior to radium treatment and deplores the general practice of curetting the local growth of making traction on the cervix with a tenaculum and of forcibly dilating the cervix to introduce a large bolus of radium. In the technique he employs 1 000 mgm of radon are placed for fifty minutes against the cervix or in a lateral fornix a few days later a second similar application is given and a few days or weeks later 600 mgm are introduced into the uterus without dilating the cervix and left in place for three hours. The local treatment is then followed by the usual cycle of deep radiation around the pelvic girdle with the radium bomb or roentgen rays.

Haupt (113) uses fractional dose of from 2 000 to 3 000 mc delivered to the uterus and the vagina. He gives a total of 6 000 mc in 12 weeks. In operable and borderline cases which he treats by operation the incidence of cure is 41.6 per cent. In all others which he treats by radiation it is 10.9 per cent. Peple (203) removes the local growth with the cautery and gives from 1 200 to 1 800 mc 3 times at monthly intervals. He obtains an absolute cure in 50.5 per cent of cases. Voltz (275 276 77 78) uses both X ray and radium in fractional treatments extending over a period of many weeks. The primary mortality in his cases is 10.8 per cent and the incidence of absolute cure 24 per cent. Kessler and Schmidt

(15) prefer fractional doses to the Regaud (French) technique because it has a lower primary mortality and morbidity. They give 3 treatments of 2 000 mc in four weeks.

*Massive continuous but slowly delivered doses (French or Regaud technique)* Cutler (53) believes that the entire cervix, paracervical tissues and parametria should be considered potentially malignant and that all lesions should be treated with maximum doses of radiation because it is impossible to determine the exact extent of the cancer by bimanual palpation. He uses from 30 to 50 mgm in the uterus and 10 mgm in each of 3 corks for the Cune colpostat. The radium is left in place for five days or until a dose of from 7 000 to 8 000 mc has been delivered. For external radiation Cutler employs a 4 gm radium pack. He gives the indications for treatment according to the extent of the lesion as follows:

Group 1. Intra uterine and vaginal radiation.

Groups 2 and 3. Intra uterine and vaginal radiation supplemented by external radiation.

Groups 3 and 4. External radiation alone or combined with vaginal radiation. Intra uterine radiation is entirely omitted or deferred.

Lacazagne (164) reports a cure in 6 per cent of 1 678 cases and Gossett and Wallon (93) a cure in 4.9 per cent of 217 cases. Laborde and Wickham (163) using the Regaud technique with subsequent deep X-ray radiation obtained an absolute cure in 23.7 per cent of cases. Phillip (11) favors the Regaud technique to eliminate complications; he has never seen a fistula develop after it. Simpson (243) is surprised that the primary mortality is only 2 per cent and that complications such as phlebitis, pelvic cellulitis, peritonitis and peritubal abscess are as infrequent as reports indicate. Bernard (18) advocates cleaning up the vagina by frequent Dakin irrigations for several days prior to treatment, judicious removal of exuberant tissues by electrocoagulation and the insertion of drains into the vagina to facilitate frequent irrigation during the eight days that radium is left in situ—all of these measures to reduce the incidence of an inflammatory reaction after the radium treatment.

**CAUTERY AND RADIUM.** Petit Dutailh (204) advocates preradiation curettage and cautery. Peple (203) destroys the local growth with hot irons and then uses fractional radium treatments. He obtains an absolute cure in 30.5 per cent of cases. Simpson (243) thinks that cautery is unnecessary and may be dangerous. Hemrotay (117, 118) has abandoned preradiation curettage and cautery and now relies on vaccines to clean up the local growth.

**SURGICAL DIATHERMY AND RADIUM.** Gerney (85) recommends electrocoagulation of the local growth and starts radiation therapy forty-eight hours after this procedure. Bernard (18) believes that removal of exuberant tissues by electrocoagulation is less harmful than the use of the curette prior to radium therapy. Guedes (98) advocates electrocoagulation and others have been favorably impressed by surgical diathermy in the preparation of the field for radium therapy. However radiation should be postponed for at least three or four weeks, i.e. until the burned area has an opportunity to slough and the wound is healed. Mikulicz Radecki (180) advises electrocoagulation for the treatment of cauliflower like growths. Carranza (39) is opposed to such preradiation therapy because electrocoagulation is followed by slough, necrosis and infection. Laborde and Wickham (163) contend that radium, needles, curettage and electrocoagulation produce infection and inflammation.

**VACCINES AND RADIUM.** Guedes (98) and Hemrotay (117, 118) employ preradiation vaccination with polyvalent sera to reduce local infection and thus decrease the incidence of postradiation cellulitis.

**COMBINED SURGERY AND RADIUM.** In all except cases belonging to Group 1, Curtis (52) usually destroys the necrotic local growth with surgical diathermy or a small dose of radium. One or two months later he resorts to coincident surgical exposure and radium treatment. The bladder is mobilized upward, the regions of the broad ligaments are exposed and the uterus is some times partially delivered broadside preliminary to use of the radium. Such coincident surgical exposure and radium therapy in extensive cases makes damage to the bladder, ureters and rectum much less likely and gives a prospect of cure in many cases of Groups 2 and 3, which heretofore have had a dubious prognosis.

Petit Dutailh (204) considers the choice between radium treatment alone and radium treatment combined with surgery as one of the most important decisions in cancer therapy today. He has found that collected statistics place the primary mortality rate after radium therapy at 3.3 per cent. The deaths are usually due to the infection which often results from the manner of applying the radium. For lesions of Group 1, Petit Dutailh recommends amputation of the cervix and radiation therapy by the Regaud technique. For those of Group 2 and 3, he suggests curettage and cauterization followed by uterovaginal radium therapy. The curette removes cancer tissue and the cautery completes

the destruction at the same time sealing off vessels and preventing dissemination of cancer cells. By this treatment Fétit Dutaillis obtains a cure in 100 per cent of cases belonging to Group 1 and 24 per cent of those belonging to Groups 2, 3, and 4. Carranza (39) advocates preradiation electro-surgical amputation of the cervix.

**COMPENSATION IS FOLLOWING RADIUM TREATMENT.** Because of the higher mortality when large single doses of radium are used Fessler and Schmidt (152) favor fractional radium treatments and are opposed to the use of radium needles. In a series of 257 cases treated by them there was a primary mortality of 6.6 per cent. Nine per cent of the women who died had a severe cellulitis with parametritis and 33 per cent a mild cellulitis.

Jones (14) believes that postradiation hemorrhage is usually due to progress of the disease rather than to radium necrosis.

Curtis (51) reminds us that radium is one of the common causes of cervical stricture. Cuthbert and Couz (99) report the occurrence of prometra in 1.06 per cent of 751 radium treated cases of cancer of the cervix. As prophylaxis they suggest thorough disinfection with vaccines before insertion of the radium, a technique of administering the radiation which assures complete sclerosis of the endometrium without stenosis of the cervix and subsequent dilatation of the cervix at regular intervals to prevent obstruction. When pyometra develops they recommend dilatation of the cervix, irrigations with hydrogen peroxide and further sclerosis of the endometrium by the insertion of radium into the corpus. In persistent cases it may be necessary to remove the uterus.

Kleine (155) believes that damage to the bladder and rectum are inevitable after large doses of radium radiation. As evidence of such injuries there may be hemorrhage, thickening of the viscous and fistula formation. Ottow (102) has seen ulcers and scars in the bladder mucosa and ulcers and fistula following radium therapy. Halter (107) observed rectal complications in 3.3 per cent of 996 patients treated by radiation therapy. Two per cent of the patients with such complications had fistula, 0.1 per cent ulcers, 0.1 per cent scars and 0.7 per cent stenosis. Halter believes that proctitis occurs quite commonly and that rectal fistula may heal spontaneously if they are due to radium necrosis alone. He states that 3,000 mc. is the maximum dose of radium radiation which can be used without causing rectal damage.

Phillip (209) recognizes that radiation of genital cancers usually leads to functional inactivity of the uterus and ovaries. However he reports

that in a series of 250 cured cases there were 2 subsequent pregnancies and of the women continued to menstruate.

**DEEP RADIATION THERAPY (X RAY OR RADIUM PACK).** No method of treating cancer of the cervix seems to be complete unless it includes deep radiation therapy. Regardless of the extent of the lesion or the type of the major therapy, deep radiation is almost universally regarded as a necessary follow-up procedure to stop the development and spread of cancer cells not destroyed by the original treatment. Kaplan (142) advocates deep X-ray therapy for its curative effect where large areas must be radiated for the treatment of inaccessible lesions and as an adjunct to radium therapy and surgery. Practically all gynecologists favor it as a palliative measure. Behney (16) recognizes the value of deep X-ray therapy in cases of extensive lesions belonging to Group 4 to prolong life, restore hope and alleviate pain.

Fried (79) recommends a reduction in the intensity of deep X-ray treatments if there is an associated inflammatory process. Phillips (211) seems to have few supporters for his contention that local radium therapy alone is better than radium and deep X-ray therapy.

**Pre radium deep radiation.** Healy (115) uses preliminary deep radiation to reduce the bulk of the local lesion. Voltz (274, 5, 2, 8) reports an absolute cure in 25 per cent of cases treated with fractional doses of deep X-ray radiation and local radium radiation. He radiates the pituitary also in cases of genital cancer.

**Post radium deep radiation.** Burnham (31) uses deep X-ray freely after the local attack with radon. Except in cases of Group 1, Cutler (51) follows up all vaginal and uterine radium treatments given according to the Regaud technique with deep radiation (4 gm. radium pack). Heyman (121, 122) maintains that the treatment of choice is radium radiation of the uterus and vagina supplemented by deep X-ray or deep radium therapy. Jones (134) uses deep X-ray treatment routinely three or four weeks after local radium treatment. Newell (196) advises a deep X-ray follow-up for all except the earliest lesions. Ward (282) advocates high voltage X-ray radiation as an important adjunct to local radium radiation. Werner (290) is convinced that from 5 to 10 per cent of patients who otherwise could not be helped are saved by radium and deep X-ray therapy.

Phillip (11) believes that patients with cervical cancer are not benefited by prophylactic after treatments with deep X-ray or deep radium radiation. On the other hand Hartman (110, 111) states that hysterectomy after radium

therapy is useless because no cancer remains in the uterus and that deep X ray treatment is preferable

*Pre operative irradiation* Brunner (28) working from the standpoint of bacterial counts and bacterial virulence in the local growth found that 50 per cent of all cases are favorable for operation two or three weeks after radiation therapy at the time of the leucopenia only 15 per cent are favorable but after from six to eight weeks operation can be performed in 66 per cent without great likelihood of serious infection during the convalescence Holzbach (131) expects improved results from operative treatment if more care is taken in the selection of cases and prophylactic X ray radiation is given from two to four weeks before operation Monod (190) favors pre operative radiation because it decreases the incidence of infection and simplifies the operative technique Leveuf Herrenschildt and Godard (170) advocate radium and X ray treatment of cancer of the cervix In favorable cases they remove the pelvic lymph glands one month after the radiation therapy They contend that such an operation is attended by relatively slight risk Hartman (110 112) agrees that it is not necessary to remove the uterus as radium completely destroys the local growth in such early favorable cases

*Postoperative radiation* Adler (1 2) follows up his radical hysterectomies for cancer with deep radiation, using either the X rays or radium Haupt (113) advocates operation only for early cases and believes that it should be followed by radiation Werner (91) maintains that radical operation with postoperative radiation is the most acceptable therapy for early cases but Phillip (207) is not convinced that deep radiation after operation is of value

*OPERATION* There are not many gynecologists who continue to favor operation for the treatment of cervical cancer The majority believe that surgery is applicable only to lesions of Group 1 and a few of those of Group 2 For more advanced lesions radiation therapy is universally accepted as the rational treatment Most of those who are surgically minded prefer the abdominal approach (Wertheim type of operation) a few advocate vaginal hysterectomy

*Vaginal hysterectomy* Adler (1 2) reports 1 000 cases operated upon by radical vaginal hysterectomy with and without associated radiation therapy The primary mortality is 3.9 per cent and the incidence of cure 98.8 per cent Adler's present technique includes removal of the uterus and parametrial tissues with the burial of 50

mgm of radium in the parametrial spaces for from six to eight hours and subsequent deep radiation therapy Adler is gratified by an appreciable improvement in the incidence of cures since he adopted this new technique Kammike (136 137) obtained a cure in 27.9 per cent of 32 cases treated by either vaginal hysterectomy or radiation In 236 operations the primary mortality was 6.3 per cent The chief cause of death was urinary tract infection

*Abdominal (Wertheim) operation* Bonfield (23) believes that patients who die eventually from recurrent cancer of the cervix suffer less pain after surgery than after radium therapy and that the abdominal is preferable to the vaginal operation Faure (67 68 69 70 71 72) is one of the world's foremost advocates of operation for early lesions limited to the cervix He reports that in 40 cases belonging to Group 1 the primary mortality was 4.4 per cent and the incidence of five year cure 90.9 per cent When lymph glands are involved Faure considers the battle almost hopeless Bonney (24) reports a primary mortality of 15.3 per cent in 339 operations Thirty-eight and nine tenths per cent of the patients were living and well five years after the operation Of those who had metastases in lymph gland at the time of operation only 23.7 per cent were cured whereas of those without such metastases 50 per cent were cured Bonney's absolute cure rate is 25.4 per cent Begoun (15) reports a primary mortality of 6.3 per cent and an incidence of five-year cure of 38.18 per cent in 55 surgically treated cases In 522 cases in which Sussman (255) performed the Wertheim operation the primary mortality was only 4.1 per cent

Grunhut (97) suggests that it may be wise to place 50 mgm of radium in the parametrium on each side during the operation and leave it in place for about six hours Holzbach (131) treated 20 cases In the 111 which were treated surgically the primary mortality was 5.6 per cent Holzbach employs radiation therapy before operation and for lesions not adaptable to surgical removal his absolute cure rate is 5 per cent Phillip (207 208) obtained an absolute cure in 26.5 per cent of 178 patients In those operated on, the incidence of cure was 49 per cent but the primary mortality was 14 per cent In those given radiation therapy the incidence of cure was 10.5 per cent and the primary mortality was only 2.2 per cent

*RECURRENTS OF CERVIX CANCER* According to Kammike (137 138) recurrences usually appear in the first year after operation however

they may not appear until years later. Bonney (24) observed that 10 per cent of his recurrences occurred between the fifth and the tenth year after operation. Lynch (172) found that nearly 25 per cent of his patients who were cured for five years died later from recurrences or other malignant lesions. Kolde (156) believes that recurrences may appear quite late and states that Bumm saw one case in which they developed twenty years after operation and 5 cases in which they occurred after ten years. In a follow up of 150 patients who were cured for five years. Burnam (33) found that 110 were living and well after ten years and 19 had died of recurrences or other cancers.

Kammiker (137, 138) recognizes 4 clinical types of postoperative recurrence: local in lymph glands, distant metastases, and implantations. Of the recurrence in 374 patients he found that 67 per cent were local, 23 per cent were in the lymph glands, 3 per cent were distant metastases, 1 per cent were implantations, and 6 per cent could not be classified. Failure to remove regional lymph glands as is customary in a vaginal operation does not materially increase the incidence of lymph gland recurrences. Local recurrences are more frequent if the adnexa are not removed and if the technique does not include the resection of a generous cuff of vagina.

Local recurrences may appear in the vagina in the midline behind and above the vaginal vault in the parametria or in the uterosacral ligaments. Ten per cent of women with vaginal recurrences are permanently cured by deep radiation therapy and 57 per cent die in the first year. Midline recurrences usually appear within a year and often invade the rectum or bladder. The results of their treatment by radiation are not good. Parametrial recurrences commonly result from overlooked or unrecognized cancer nests on the ureters, the stump of arteries, the bladder or the rectum or in the cut ends of ligaments. They usually appear soon after operation and the results of treatment are good because of their accessibility. Twenty per cent are cured by deep radiation therapy.

Lymphatic and recurrences may occur in glands on the pelvic wall in more distant chains or in the inguinal regions. Those on the pelvic wall cause symptoms from pressure on nerves and ureters. Eighty per cent of women with such recurrences die within a year, 7 per cent are cured by operative removal with or without radiation therapy. Involvement of distant glands is less common and is evidence of widespread dissemination of the cancer. Inguinal metastases

probably occur because of a perverted lymph flow after operation. Operative removal is indicated for early cases but the prognosis in general is poor.

Implantation recurrences may appear in laparotomy or Schuchardt scars. They should be removed but the prognosis is not good.

Distant metastases are rare. They usually appear within three years. Treatment is useless.

Bladder involvement may be recognized from severe cystitis with bullous oedema, marked thickening of the wall, diverticulum formation, friable penetrating cancer tissue or the development of fistulae. Halter (107) found rectal invasion in 22 per cent of 350 recurrences. He agrees with Kammiker (137) that the essential proctoscopic findings are fixation of the mucosa, umbilication, stenosis, perforating cancer tissue or fistulous openings into the vagina.

Treatment of recurrences. Kammiker (137) has found that operative removal of recurrences is difficult. In selected cases a colostomy may give comfort. Kammiker does not favor resection of the presacral nerve for the relief of pain. He regards deep radiation in large doses as the best treatment. By means of it he obtained a permanent cure in 81 per cent of recurrences proved by histological study. Jones (134) suggests radon seed implantation as a worthwhile procedure. Burnam (33) reports the incidence of five year cure following radiation therapy as 11.25 per cent. Ward and Farrar (284) are warm in their praise of radiation treatment for recurrences. Seventy five of their 147 cases of recurrence were treated. Twenty four per cent of the patients lived for five years and 16 per cent for from five to ten years. Ward and Farrar are convinced that without this reradiation all of their patients with recurrences would have died.

PALLIATIVE MEASURES. Patients who present themselves with a far advanced growth are worthy of the physician's best efforts. Much can be accomplished in the relief of pain, the control of bleeding, the building up of resistance, the improvement of morale, the arrest of fetid discharges and measures to render the remaining days more peaceful and comfortable.

Alvarez (5) and Ward (282) believe that blood transfusions are most helpful and too frequently forgotten. According to many gynecologists radiation therapy in moderate carefully controlled doses will stop the tendency toward terrifying hemorrhages and decrease fetid sanguinous discharges. Deep radiation therapy may prolong life for several years.

Bainbridge (9) draws attention to the value of ovarian ligatures on the ovarian and internal

iliac vessels with removal of lymph glands en bloc to stop the advance of uterine cancer. Kumamoto (161) has shown by experimental studies that ligation of the uterine vessels has only a temporary effect on the advance and extension of cancer of the cervix.

Kamniker (137) believes that colostomy should be performed more frequently. Latzko (168) mentions implantation of the ureters into the rectum for the relief of vesical distress but it is probable that such heroic treatment is indicated only in unusual cases.

Neurosurgical procedures are constantly gaining favor for the relief of severe pain caused by pelvic malignancy. Condamin and Arnulf (43) recommend nerve injections with Sicard's mixture. They advise transsacral injections to control sacral roots and paravertebral injections to affect the lumbar roots. They employ also epidural injections. They have found this a simple procedure followed by sufficient relief to allow the patient to die peacefully. After two or three months a repetition of the injections may be necessary. Failure to obtain relief is due to inaccurate injections based on faulty determination of the topographical distribution of the pain.

Many gynecologists recommend operations on the lumbar and pelvic sympathetic nerves. Such procedures permit abdominal and pelvic exploration, confirmation of the diagnosis by biopsy and the removal of discrete tumor growths. Fontaine and Herrmann (74) favor extensive pelvic sympathetomy because it relieves pain and is not followed by serious complications such as motor palsies, ascending urinary tract infections and sensory disturbances. Kordenat (157) recommends lumbar sympathetic ramsection. Cotte (44) is the chief exponent of resection of the presacral nerve. He sometimes resorts to hypogastric periaxial sympathetomy and suggests that at op-

eration for cancer of the uterus it may sometimes be advisable to resect the presacral nerve to prevent pain later. Greenhill and Schmitz (96) prefer presacral nerve resection to chordotomy because the latter is a more extensive operation and if not performed accurately does not give relief. It is significant that numerous operations on the sympathetic system have been suggested in recent years for an equally large number of conditions and that reports from the exponents of these various procedures seem to indicate that their patients are relieved. Yet Loyal Davis says that the most accurate physiological work available has failed to demonstrate a direct sensory pathway in the sympathetic system although this system probably participates in the physiological pathways of referred pain.

When performed by a skilled neurosurgeon chordotomy is the ideal method of relieving pelvic pain. It is recommended by Grant (94), Jones (134) and Kahn (135). Grant says that pain can be relieved at any point below the ensiform by section of the anterolateral columns. The advantages of chordotomy are summarized as follows:

1. Since pain fibers are compactly collected in the anterolateral columns section here produces the largest possible area of anesthesia.

Pain and temperature sensations alone are obliterated and the usefulness of the lower extremities is not impaired.

3. The operation necessitates only a small laminectomy; consequently it is not an exhausting procedure.

If the section is not accurate the pain may not be entirely relieved and there may be damage of the motor tracts resulting in paralysis and loss of sphincter control. Such undesirable complications can be avoided by performing the chordotomy under local anesthesia.

## CARCINOMA OF THE BODY OF THE UTERUS

INCIDENCE. Buben (29, 30) reported that 10 per cent of all pelvic cancers originate in the body of the uterus; that in nulliparæ cancer of the body of the uterus is more common than cancer of the cervix; and that most of his patients with cancer of the body of the uterus have passed the menopause. The relative infrequency of carcinoma of the corpus before the menopause is quite striking.

Gilbert (89) observed carcinoma of the corpus in a girl of eleven years. He was able to find only 5 other reported cases of cancer of the corpus in girls under fifteen years of age.

ETIOLOGICAL FACTORS. The growth and development of the endometrium is controlled largely by the anterior lobe of the pituitary gland and the conclusion has been drawn that hyperactivity of the pituitary gland may cause hyperplasia of the endometrium. Hofbauer (128) suggests that continued overstimulation of the pituitary gland might give rise to cancer of the corpus. Taylor (56) wondered if hyperplasia of the endometrium should be considered a precancerous lesion but his careful studies show that it is a forerunner of carcinoma only infrequently. Taylor advises the use of radium in the treatment of

hyperplasia occurring at or after the menopause such therapy is indicated to stop bleeding and for its prophylactic effect.

**Pathology.** Ruben (9, 30) looks on carcinoma of the corpus as the most favorable type of pelvic cancer. It is so benign that it remains confined to the uterus for a long period of time, probably for years.

Gutman (203) reports 2 cases of carcinoma of the corpus associated with fibroid. He urges a continuous follow up of cases of fibroid treated by radiation because of the possibility of the later development of cancer. Macfarlane (174) reports a case in which uterine bleeding recurred fifteen years after castration by X-ray treatment for bleeding fibromyomata. The recurrence was treated with radium. Four months later curetting revealed an adenocarcinoma of the corpus and hysterectomy was performed. Macfarlane was able to find reports of only 29 cases of uterine cancer (cervix and corpus) following radiation therapy. She wisely concludes that *persistent cryptic bleeding after radiation therapy is an indication for operation regardless of the findings at curettage*. Sophian (126) describes 2 adenocarcinoma of the uterus. Nine years previously one of the patients had received X-ray therapy for menopausal bleeding.

Kistler (154) adds another case of mixed tumor of the uterus to the few previously reported. The patient died of recurrence two and one half years after operation. Rei and Cutler (21) recognize anaplastic cancer as the most malignant type of carcinoma of the body of the uterus. It is also the most radio-sensitive. They recommend radiation followed by operation for favorable cases and radiation alone for cases which are more advanced. Dworak (62) describes a 15 cm. carcinomatous cyst of the uterus which was associated with fibroid. He adds that such a cancer might have arisen from misplaced muellerian tissue.

Tracy (266) cared for a patient with an ectopic pregnancy complicating a corporeal cancer. In a review of the literature he was unable to find the record of a similar case.

Of the 520 cases of cancer of the corpus reported by Olfitt (198) from the Mayo Clinic an associated carcinoma of the ovary was present in 11.9 per cent, whereas of 616 cases of papillary cystadenocarcinomata of the ovary 8.6 per cent were complicated by cancer of the body of the uterus. Olfitt believes that cancer cells may be transported through the fallopian tubes and that the operative care of carcinoma of the ovary must include hysterectomy.

Gunnett and Curdwin (101, 102) observed a cherry sized suburethral metastasis. In a case seen by us in which a similar nodule was found just beneath the external meatus the patient is well two years after operation.

**Diagnosis.** Bedre (14) advises curettage in every case of suspicious uterine bleeding and suggests that lipiodol injections for hystero-graphy may be helpful in selected cases. Carsten (38) diagnosed his patient's lesion as a cancer of the corpus from the hystero-gram at operation; it proved to be an endocervical carcinoma with an associated pyometra. The use of lipiodol for the diagnosis of cancer of the uterus is open to considerable question. Ruben (29, 30) urges more frequent curettage for diagnosis and believes that the findings made with a uterine sound or by palpation are only suggestive. Muller (192) reports a case of soft highly malignant cancer of the corpus which could not be diagnosed from curettings. He adds that the findings with a curette are not infallible. In this conclusion Bainbridge (9) concurs.

**Treatment.** The present day trend of thought is away from the old concept that cancer of the body of the uterus is not susceptible to radiation therapy and that operative removal is the only acceptable treatment. There is a continuous increase in the number of gynecologists who use radiation therapy for corporeal cancer. The results obtained are encouraging.

Bedre (14) believes that operation is preferable to radium therapy. He states that he has cured 50 per cent of his patients by surgery. Of 189 cases reported from the Mayo Clinic by Bowing and Fricke (25) 87 were treated by operation and radiation and 102 by radiation alone. Of the patients with so-called operable lesions 31.16 per cent of those treated surgically are living and well five years after operation and 46.75 per cent of those receiving radiation alone are well after three years. Of the patients with inoperable lesions 12.64 per cent of those treated by operation with subsequent radiation and 26.37 per cent of those treated by radiation alone are apparently well. Bowing and Fricke recommend operation followed by radiation therapy whenever it is possible. Radium and X-ray treatment alone are beneficial in the less favorable cases. Ruben (29, 30) performs vaginal hysterectomy in favorable cases and abdominal hysterectomy in complicated cases. Haupt (113) obtained a cure in 61 per cent of 72 cases. He recommends operation and does not approve of the use of radium alone for corpus cancer. In the period from 1914 to 1920 Heyman (121, 122) treated 80 patients



by radiation therapy alone. As 42.5 per cent are living and well today, he is convinced that adenocarcinoma of the corpus is not resistant to radium treatment. Kaplan (142) holds that cancer of the corpus is treated just as well by radiation as by operation and recommends the introduction of radium into the uterine cavity with deep X-ray therapy over the entire pelvis. Of 283 cases reported by Volbracht (274), 133 were treated by operation, 143 were treated by radiation alone, and 9 were not treated. In the surgically treated cases the primary mortality was 17.2 per cent and the incidence of cure 54.1 per cent. Of the cases given only radiation therapy, 48.1 per cent were cured. Volbracht does not recommend

postoperative radiation. Voltz (275, 276, 277, 278) obtained a five year cure in 45.8 per cent of 107 cases treated by radiation alone. Of 39 patients treated in the period from 1911 to 1926, 61 per cent are living and well today. The primary mortality in these cases was only 0.3 per cent as contrasted with the primary mortality of 10 per cent usually estimated for operative treatment. Voltz is convinced that radiation therapy yields just as good results as surgery and is even preferable to it. He believes that the results from radiation therapy are constantly improving because of changes in the technique of its administration and routine radiation of the hypophyseal area as suggested by Hofbauer (128).

### SARCOMA OF THE UTERUS

**INCIDENCE.** In a period of six years Haase (106) observed 38 sarcomata of the uterus among 53 sarcomata of the genitalia. On the basis of the 11,000 gynecological admissions during this period the incidence of uterine sarcoma was therefore 0.34 per cent, and on the basis of all malignant tumors of the uterus it was 5.2 per cent. Unbehaun (67) found that 4 per cent of all uteri removed at the Giesen Gynecological Clinic in the period from 1918 to 1931 were sarcomatous. Wolfe (295) believes that sarcoma is more common after the menopause. Okkels and Therkelsen (199) state that Melchior found only sarcomata in 3,500 uterine scrapings, and that Moller observed 7 sarcomata in 5,035 curettages, 29 sarcomata in 1,178 biopsies, and 4 sarcomata of the uterus in 5,766 autopsies.

Haase (106) found sarcoma in 30 (4 per cent) of 750 uterine fibromyomata. Hoeng (127) cites Norris as having discovered sarcoma in 2.3 per cent of 2,067 uterine fibroids, and Ewing as estimating the incidence of sarcoma in uterine fibroids at about 3 per cent.

**PATHOLOGY.** In 32 of the 38 cases reported by Haase (106) the tumor arose in the corpus and in 6 in the cervix. In 35 it started in the myometrium and in 3 in the mucosa. In 30 it developed from a fibromyoma. Hoeng (127) reports sarcomatous changes in a pedunculated fibroid removed because of sterility, and quotes Ewing as saying, "A malignant myoma does not necessarily represent the transformation of a previously benign tumor, probably the majority are malignant from their inception." Ahumada and Maciotra (4) report the case of a patient who spontaneously expelled an encapsulated sarcoma from the uterus, refused further treatment, and was known to be well twenty-three months later.

Okkels and Therkelsen (199) success fully removed a large cystic sarcoma of the uterus from a woman fifty-three years old. Stevens (249) reports a rhabdomyosarcoma of the cervix in a young woman. Burger (31) reports the case of a patient who had been curetted and given radium treatment for bleeding fibroids in 1921. The treatment was repeated in 1926 and again the curettage failed to disclose malignancy. Later the patient was operated on because of a mass associated with lower abdominal pain. Hematometra, a uterine fibrosarcoma, and a right hematosalpinx were found. Cowles (45) reported the case of a patient who presented both a cancer of the corpus and a sarcomatous polyp at the cervical os. De Gery and Reeb (83) tell of a myeloblastic cervical sarcoma associated with bilateral ovarian carcinoma. Matias (182) saw a grape-like sarcoma of the cervix incarcerated in an intact hymen. He removed the growth with the cautery and performed a radical abdominal extirpation.

**DIAGNOSIS.** Unbehaun (267) believes that the best criteria for the diagnosis of sarcoma are active proliferation and rapid growth. Wolfe (295) has found that curettage yield adequate material for a positive diagnosis in only 50 per cent of cases. He believes that all uteri removed for supposed fibroid after the menopause should be examined and studied immediately for cryptic malignant growths. Wintz (293) states that a uterine tumor which is reduced to half its size within three weeks after radiation therapy is probably a sarcoma as myomata do not involute so rapidly.

**TREATMENT.** Wintz (293) reports a five-year cure in 5 per cent of 4 proved cases of uterine sarcoma treated solely by deep X-ray therapy. Wolfe (295) recommends radical removal followed by intensive radiation therapy.

## CHORIONEPITHELIOMA

Colucci (42) reports a case of chorionepithelioma of the cervix following the expulsion of a hydatidiform mole in which secondary tumors were found in the corpus. He quotes Alfieri's mortality statistics according to which 56 per cent of all chorionepitheliomata are fatal the mortality of those associated with secondary growths in the cervix is 75 per cent and the mortality of those primary in the cervix is 25 per cent.

Curtis (50) presents a beautifully illustrated (in colors by Tom Jones) report of a fatal case in which the classical lesions were found at autopsy. Two years previously the patient had passed a mole. Curtis observed a strikingly positive Hegar sign. The persistence of a soft lower uterine segment despite the absence of a fetus for many months is evidently ascribable to the continued viability of chorionic cells.

Lackner and Leventhal (164) report the cure of a nineteen year old girl with chorionepithelioma of the uterus complicated by extensive metastases to the lungs (as shown in X ray plates). They first performed a deep terectomy and then administered intensive deep X ray therapy. Today more than five years after the operation the patient is well and free from recurrences.

Lapham (167) calls attention to the great value of pregnancy tests (Aschheim Zondek and Friedman) in the diagnosis and prognosis of hydatidiform mole and chorionepithelioma. He believes that strongly positive tests after operation indicate persistence of the growth often as metastases.

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# ABSTRACTS OF CURRENT LITERATURE

## SURGERY OF THE HEAD AND NECK

### HEAD

Straus D C Tuberculosis of the Flat Bones of the Vault of the Skull *Surg Gynec & Obst* 1933 12:384

Straus discusses tuberculosis of the flat bones of the skull on the basis of 3 cases of his own and 220 cases reported in the literature. Tuberculous lesions of the flat bones of the vault of the skull constitute about 0.2 per cent of tuberculous bone lesions. They are most frequent in early childhood and usually secondary to tuberculosis elsewhere. As a rule the infection reaches the skull through the blood stream and less frequently by way of the lymphatics. Trauma often seems to be a predisposing factor.

When the bone infection is of hematogenous origin the initial localization is in the vascular cancellous bone of the diploe. In a few cases the disease begins in the periosteum and very rarely the site of origin is the dura. The bones most frequently involved are the frontal and the parietal. More than one focus of involvement is usually demonstrable. Two types of the disease are generally recognized: the circumscribed or perforating type and the diffuse progressive type.

The chief sign is a swelling of variable size due to a subperiosteal abscess. The abscess may later perforate with discharge of typical tuberculous pus and subsequent fistula formation. Of aid in the diagnosis are the tuberculin test (especially in young children) and the roentgenogram. The latter shows one or more circumscribed punched-out looking defects in the bone. Smears, cultures and guinea pig inoculation may also be of aid. The condition must be differentiated from gumma, osteomyelitis, osteosarcoma, perforating malignant tumor, cephalic hematoma, sebaceous cyst and actinomycosis.

The prognosis depends upon the gravity of the associated tuberculous lesions and the extent of the disease in the skull. If the general condition is good and the cranial lesion is circumscribed the outlook is good. Cases of primary tuberculosis of the vault show the greatest percentage of cures. The only proper treatment is radical surgical removal of all diseased tissue.

*J Clin Med* Nov '33

Foelking H Ectopic Mixed Salivary Gland Tumors in the Region of the Face (*Z. Kennel*) *Archiv f. Klin. u. Exp. Chir.* 1933 193: 933

Mixed tumors of the large salivary gland are very similar phylogenetically, morphologically and histologically to mixed tumors of the parathyroid gland.

logically to mixed tumors of the lachrymal glands. Their parenchymal cells are generally assumed to be of epithelial rather than endothelial origin and to arise from elements displaced during fetal growth.

The author has collected from the literature the reports of mixed tumors which in cellular structure and behavior closely resembled typical mixed tumors of the salivary and lachrymal glands but were located at a distance from these glands. These reports were made by Larabne, Nasse, Eisenmenger, Volkman, Pupo, Landstener, Bouisset, Semjonoff, Coenen, Looser, Guleke, Lenormant, Duvac, Cottard, Krompecher, Brueggemann, Raach, Barbezat, Becker, Bergemann, Wick, Kummel, Tammann, Kreibitz and Fischer, Wasels.

Froelking studied histologically a growth in the canine fossa which was similar to a mixed tumor of the parotid gland, a basal celled epithelioma and a typical mixed salivary gland tumor in the region of the nasolabial fold and a tumor resembling a mixed salivary gland tumor occurring on the tarsus of the upper eyelid in the region of the superior lachrymal gland but not connected with it.

From the findings of his histological studies he concludes that all of these ectopic neoplasms should be classified in the same group with the typical mixed tumors of the salivary and lachrymal glands on the basis of the type of their parenchymal cells and the origin of the growth. In only three instances was the tumor situated elsewhere than in the face. Froelking believes that these ectopic tumors are derived from cells displaced from those parts of the ectoderm which under normal conditions possess the ability to form salivary or lachrymal glands. These cells wander into the connective tissue and undergo proliferation and lead to mucoid and hyaline changes. This theory will account for the mucoid and hyaline areas in the connective tissue of the tumors. The author refers to forty cases in the literature.

GEORGE SCHWARTZ (Z)

### EYE

Geeves R A An Operative Method for the Relief of Congenital Ptoptosis *Proc R Soc Med Lond* 1933 26: 48

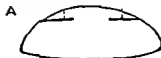
Cases of congenital ptosis may be divided into three classes: (1) partial ptosis with independent action of the levator palpebrae superioris muscle; (2) complete ptosis with little or no action but with good upward movement of the globe; and (3) complete ptosis with deficient upward movement of the globe.

In order to estimate the amount of levator action present in a given case it is necessary to place the hand firmly over the frontalis muscle while the patient makes an attempt to open the eye. The author discusses chiefly cases of the second class which he believes are the most common. He has always regarded the Mouton operation as a good one but as it occurred to him that a better result might be obtained by attaching the lid to the superior rectus muscle he devised the following operation.

A controlling suture is first inserted in the conjunctiva immediately above the cornea and the eye depressed as far as possible by means of it. The superior rectus tendon and its attachment to the globe are exposed by a horizontal incision through the conjunctiva and a squint hook is passed under the tendon (Fig. 1). A silk thread is then pushed under the tendon the hook is withdrawn and the two ends of a thread are secured by a Spencer Well forceps. The eye is then controlled with this thread instead of with the preliminary conjunctival suture which may be removed.

Next the upper lid is everted and the conjunctiva above the incision seized by forceps and dissected upward until the upper edge of the tarsal plate is exposed. The upper edge of the tarsal plate is gripped centrally by catch forceps and on each side of the forceps a thin strip of tarsus is cut with a fine pair of bent scissors from without inward and from within outward respectively. Each strip is left attached centrally. The width of the uncut area of tarsal plate between the strip is about the same as that of the superior rectus tendon. The strip of tarsal tissue should be as long as possible (Fig. 2). A No. 4 needle threaded with No. 1 silk is passed through the end of one of the strips and again through the corresponding edge of the superior rectus tendon and a similar suture passed through the other strip and the other edge of the tendon. In order that the relative positions of the eye and eyelid may be judged the sutures are then drawn tight

### Lines of incision



### Tarsal strips

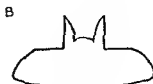


FIG. 2 Tarsal strips

without being tied. The edge of the lid should slightly overlap the upper part of the cornea.

This operation may be done under general or local anesthesia.

Great care must be taken to prevent exposure of the cornea during the healing stage. It is better not to sew the lid together. The best form of dressing is a sausage shaped pad placed over the upper lid and kept in place by strapping and a bandage. This prevents inversion of the upper lashes and keeps the eye efficiently closed. The sutures can easily be removed after about ten days.

After healing has taken place and all reaction has disappeared it will frequently be found that when the eyelid is raised the skin of the upper lid is apt to fall in an unsightly fold over the lashes. The skin is flabby and seems to lack the normal tone. This

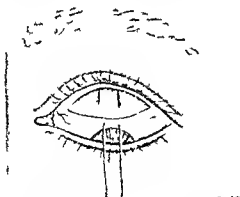


Fig. 1 Showing the contralateral and the exposed superior rectus tendon



Fig. 3 The dotted line indicates the position of the tarsal plate tarsal strip sutured to the superior rectus tendon and sutures where the operation is completed

can easily be remedied by a plastic operation carried out according to the principles of the Hotz operation

LESLIE L. MCCOY M D

Pereira R F Hydatid Cyst of the Orbit (Ounste  
h d tidi de l d hita) Rev Assoc med a g l  
1937 xl 793

The author reports two cases of hydatid cyst of the orbit which were operated upon successfully. He states that cysts of this type in the orbit are relatively rare. In Argentina they constitute only 2 per cent of all hydatid cysts. Males are more frequently affected than females because they are more frequently exposed to the infection. Pereira's patients were fifteen and thirteen years of age.

The beginning of the disease is generally slow and gradual but Schmidt has reported a case in which intense exophthalmos and loss of vision occurred within a month. In some cases the development of the condition requires years but the average length of time from the beginning of symptoms to operation is eight or nine months.

As a rule the first symptom is pain beginning with a feeling of weight or pulling in the back of the orbit. This may increase until it causes insomnia, vertigo and delirium. In some cases it may be continuous but more frequently it is intermittent. It may stop for a while when exophthalmos begins and recur later. It may radiate in various directions—to the point of exit of the supra-orbital nerve or to the nasal frontal temporal or infra-orbital regions. There are cases in which it radiates to the occiput and involves the entire half of the skull and face on the side on which the cyst is located.

Another early symptom is diplopia. This is very frequent but not constant. It generally precedes the exophthalmos.

The frequency of the cysts in muscle explains the earliness and frequency of pareses and paralyses of the muscles. In addition to muscle paralysis the mechanical displacement of the eyeball caused by the cyst interferes with the movements of the eye. Exophthalmos is common to all tumors of the orbit. Its degree depends upon the size of the tumor. The exophthalmos due to a hydatid cyst of the orbit is not pulsatile or reducible and does not increase on effort or when the head is lowered. There are records of a few cases of pulsatile exophthalmos from intra-cerebral cysts which eroded the wall of the orbit so that the pulsations of the brain were transmitted to the eyeball.

At first a hydatid cyst of the orbit cannot be palpated. As a rule it reaches a size between that of a walnut and that of an egg before it is perceptible. When it is situated in the upper part of the orbit and compresses the levator palpebrae muscle it causes ptosis which may become permanent if operation is not performed before the muscle and nerve have been seriously damaged. The tumor is generally round.

No tremor or fluctuation can be noted. There is no pain on palpation. The local temperature may be slightly elevated. If the cyst is back of

the eyeball and presses the eyeball forward it causes hypermetropia but if it is lateral and presses the eyeball against one of the walls of the orbit it causes myopia from enlargement of the anteroposterior axis. Astigmatism is less frequent. Disturbances of accommodation are common. In the majority of cases there is mydriasis with paralysis of the ciliary muscle and iris probably from compression of the ophthalmic ganglion and ciliary branches. Ophthalmoscopic examination is important. Optic neuritis and edema of the disk are frequent. They are produced not only by pressure but also by the toxic action of the cyst fluid. Vision may be restored if operation is performed soon enough. Color vision is preserved except when atrophy of the disk occurs. The visual fields are rarely affected.

The prognosis with respect to life is good and with respect to vision is good if operation is performed early.

The differential diagnosis of tumors of the orbit is difficult. In addition to exclusion there are three biological tests of value in the diagnosis of hydatidosis: the Weinberg reaction which is a complement deviation reaction, the eosinophile count and Casini's intradermal reaction.

The treatment is entirely surgical. Puncture of the cyst was done formerly but has been given up. The treatment of choice consists in extracting the cyst through an incision in the conjunctiva and pulling out the germinal membrane with the forceps or if the membrane is adherent, curetting it out.

ARMSTRONG M D

Mann I On Congenital Hyaline Membranes on the Posterior Surface of the Cornea. B U J  
Ophth 933 21 449

Mann says that to explain congenital hyaline membranes on the posterior surface of the cornea it is necessary to consider (1) the possibility of a similar condition arising from any cause in post-natal life and (2) the possibility of a purely embryological explanation. With regard to the first possibility he says that new formation of hyaline material in the eye from chronic irritation occurs in both glaucoma simplex and chronic iridocyclitis. Collins and Mayou state that it is found more often in infantile glaucoma (buphthalmos) than in the glaucoma simplex of adults. He says that the new formation of a hyaline membrane on the anterior surface of the iris may be produced beneath the layer of endothelial cells. This membrane seems to be continuous with Descemet's membrane around the angle to extend over the peripheral anterior synchiae and to be produced by the mesoblastic endothelial cells.

Herbert used section staining with acid orcein on the anterior parts of chronically inflamed eyes and showed a photograph in which the lamellae externa of the ciliary body ended in a glass membrane network representing the periphery of the iridodilator. He states that free epithelial cells may wander forward leading to laminated hyaline mass.

terial on the corneal side of the angle and that in cyclitis laminated tissue in the anterior chamber lacking the dense glassy appearance and the staining characters of glass membrane may be found extending up beyond the middle of the back of the cornea and may be covered by a fairly thick single layer of dense new hyaline tissue exactly like Descemet's membrane. Under irritation the lens epithelium can produce hyaline material in the same way as pigment epithelium. It seems then that under the influence of inflammation both epithelial and endothelial cells in the anterior part of the eye can produce hyaline material.

In these cases there seems very little evidence that the abnormal membrane was so produced. In no case except the case reported by Ballantyne was there any trace of precipitates or any posterior synechiae of the uveal border. The presence of a fetal rest cannot be assumed since at no time after its formation is the pupillary membrane adherent to the cornea and the cornea is not covered by peripheral hyaline tissue in normal development. A possible embryological cause might be an abnormality of the postendothelial tissue which forms the anlage of the pupillary membrane and anterior layer of the iris stroma. This tissue which is marked in rodents and very poorly developed in man can be seen in the 12 mm stage in human embryos. Possibly if it remained too long in contact with the periphery of the cornea it might lead to the formation of hyaline tissue at this site and to abnormality of the pupillary membrane.

In conclusion the author states that we may say only that the condition is congenital and that fetal inflammation acts as the initial cause.

LESLIE L. MCCOY, M.D.

Thomas J. W. T. Microscopic Appearances of Corneal Graft. *Bull. J. Ophth.* 1933 x 1 529

Dense opacities in the corneal grafts studied by the author were associated with (1) iris adhesions (2) folds in Descemet's membrane (3) new tissue formation behind Descemet's membrane (4) vascularization of the graft through the cornea (5) vascularization of the graft through iris adhesions (6) a large increase in the nuclear content of the graft (7) the formation of irregular spaces between the graft fibers causing irregular refraction and diffraction and (8) a large increase in the thickness of the graft.

SAMUEL A. DURE, M.D.

Slocum C. Employment of a Conjunctival Bridge and Suture in Cataract Extraction. *Arch. Ophth.* 1933 329

Slocum used a conjunctival bridge for the first time in extracting a cataract from an unruptured patient. It proved so satisfactory that thereafter he used such a bridge routinely. Later he modified the technique so that the bridge was extended upward with the scissors for several millimeters, the top of the bridge was partly cut across on one side from below upward to facilitate incision and extrac-

tion and dissection of the flap was followed by the introduction of a suture to be tied when the operation was completed.

Statistics of operations performed under various conditions showed that the bridge improved the results and that the best results were obtained with the bridge and a suture. SAMUEL A. DURE, M.D.

Samuels B. Sympathetic Scleritis. *Arch. Ophth.* 1933 x 85

The uvea is the primary site of sympathetic ophthalmia but the specific infiltration involves contiguous structures. In a microscopic examination of ninety-four globes to determine the exact manner in which the sclera may be involved it was found that the posterior zone of the sclera especially around the optic nerve and in the region of the macula was most frequently and most severely involved. Involvement of the sclera depended on infiltration of the choroid. In twenty-seven globes the sclera was free from inflammation. In the sixty-seven others the scleral involvement consisted of inflammation in the wall of emissaria, diffuse internal scleritis, circumscribed interstitial scleritis, nodules or external scleritis. As a rule two or more of these conditions were associated.

As there is a possibility of specific infiltration outside the globe, a long piece of optic nerve with adjoining tissue should be removed at operation and in cases in which sympathetic ophthalmia is suggested it is advisable to apply radium therapy to the orbital contents remaining after enucleation.

GEORGE R. McALLISTER, M.D.

## EAR

Rodger T. R. The Treatment of Chronic Suppurative Otitis. *J. L. y. col. & Otol.* 1933 1 11 525

Of the different methods of non-operative treatment of chronic suppurative otitis, Rodger prefers the dry treatment after a thorough preliminary cleansing. The ear is first syringed to clean the meatus. The middle ear is then thoroughly irrigated with a Hartmann cannula being insinuated into the perforation or against it. When the return flow has become clear the ear is mopped quite dry. Then while the surgeon holds a final mop in readiness to catch the moist bubbles the patient is made to inflate the ear by Valsalva's method until the escaping air has a dry sound. When the ear has been thus thoroughly cleansed and dried the inner part of the meatus is filled with fine boracic powder blown in with an insufflator. In some cases the removal of small granulations or polyps may be necessary first. In these cases the prognosis is not so good. A search must be made also for nasal and nasopharyngeal conditions which might militate against a successful result.

In quite a fair proportion of cases the ear remains dry after the first treatment. It appears that in such cases inspissated material lodged behind the tip of the perforation has been acting as a foreign body.

## INTERNATIONAL ABSTRACT OF SURGERY

The patient is instructed to return for a repetition of the treatment whenever the powder becomes moist but it is wise to give him an appointment for two weeks later in any case as moisture may be present without his being aware of it. A large perforation may not heal but if the ear remains dry for a considerable period it may be assumed that the suppuration is confined to the middle ear and any recurrence may be treated confidently in the same way.

The patients must be regularly re-examined by the surgeon himself. If satisfactory progress is not apparent within a reasonable time operation should be advised.

JAMES C. BRASWELL, M.D.

Gray A. A. Two Cases of Acoustic Tumor With Clinical and Pathological Reports. *Proc. Roy. Soc. Med. L.* 1933, 26, 1, 1309.

The author reports two cases of acoustic tumor and discusses a third which was reported previously. In all three the tumors occurred in the course of multiple neurofibromatosis (von Recklinghausen's disease) and were bilateral. The ganglion sprang was affected and it was clear that this is a fairly early change because in Case 2 the tumor was very small and had hardly begun to produce clinical evidence of a disturbance of hearing. In spite of very advanced degenerative changes in the ganglion spiral the organ of Corti was apparently quite normal in two of the cases and was affected only in the lower whorl in the third.

Perhaps the most remarkable feature was the occurrence of areas of typical otosclerotic bone. In two of the cases these areas were found in the situation in which they are almost always found in ordinary cases of otosclerosis that is in front of the oval window. In the third case the otosclerotic bone was present in the canal of the cochlea in its apical whorl a most unusual situation.

There was no deafness in any of the cases until after the tumors had manifested their presence by disturbances of equilibration or delayed vestibular reactions. Therefore the otosclerosis must have developed after the tumors on the acoustic nerves. One of the patients was only fourteen years old. Otosclerosis may occur at that age but is very uncommon so early in life.

While it is within the bounds of possibility that there was no relationship between the occurrence of the acoustic tumors and the otosclerotic bone—in other words that all three patients had acoustic tumors and happened also by pure coincidence to develop otosclerosis the author believes that this is highly improbable.

JAMES C. BRASWELL, M.D.

## MOUTH

Hyndman O. R. Carcinoma of the Lip. A Clinical and Surgical Analysis of Sixty Seven Cases. *Ann. Surg.* 1933, 97, 1, 1309.

Epidermoid carcinoma of the lip constitute from 2 to 3 per cent of all cancers and occur twelve

times as frequently on the lower lip as on the upper lip. As the regional glands of the neck present an almost impassable barrier to further metastases death is generally due to the local and regional development of the disease rather than distant invasion.

The author has divided his analysis of cases into two parts. In the first part the clinical picture is correlated with the pathological findings in the glands and the subsequent course, whereas in the second part the histological features of the primary lesion are analyzed in an attempt to correlate them with the course of the disease.

Of the tumors discussed in Part I 80 per cent were found to be essentially benign neoplasms which were slow to metastasize. The prognosis after conservative surgical intervention ranged from good to excellent. In a relatively small group of the cases the lesions were clinically highly malignant. Metastases developed early and regardless of radical surgical intervention plus intensive irradiation the incidence of cure did not exceed 50 per cent. These more malignant tumors were non-keratinizing and presented the characteristics of buccal carcinoma elsewhere whereas the relatively benign keratinizing tumors had the characteristics of epidermoid carcinoma of the skin in general.

In the second part of the article the lesions are classified into three groups: (1) very benign appearing lesions including warts which fall in Broders' Grade I; (2) epidermoid carcinomata which show an advanced degree of differentiation with more keratinization and pearl formation than in Group I; and (3) lesions with obvious malignancy as evidenced by a lack of differentiation and an abundance of mitotic figures which correspond to Broders' Grade 4.

According to this classification thirty six of the primary lesions were classed histologically as relatively benign. Only two of them had formed metastases at the time radical operation was performed. Of the ten lesions which were classed histologically as highly malignant six had formed metastases and more than half were fatal.

The choice of the method of treatment must be based on a careful clinical examination and a microscopic study of the primary lesion. If no gland is palpable and the lesion falls in Group 1 or 2 removal of the primary lesion with an adequate margin all around is usually sufficient. If glands are palpable one or more of them should be removed and examined microscopically. If they show no metastases it is necessary to remove only the primary lesion but if a metastatic lesion is found in any of the submaxillary and submental gland locations. If the primary lesion falls in Group 2 a complete block resection followed by irradiation is indicated regardless of the clinical findings. Irradiation is not advisable unless there is surgical intervention.

WILLIAM G. HAMM, M.D.

## NECK

Torelli G. Observations In 100 Cases of Cervical Rib (Os er a toni sop a oo c i di coste cervicali)  
*Polid. Rome 1933 xl ex ch r 399*

The author reviews in detail 100 cases of cervical rib after briefly reviewing the theories of the genesis of these abnormalities. He has found cervical ribs in about 2 per cent of his patients. In 69 per cent of the cases they were bilateral. Of the bilateral cases the more pronounced rib was on the right side in all whereas of unilateral cases it was on the left side in 70 per cent. Eighty per cent of the cases were those of females. That heredity may play a rôle is indicated by the not infrequent occurrence of cervical ribs in several members of one family. Torelli describes the surgical anatomy in detail and presents a classification of the different types of cervical ribs.

Of the 168 cervical ribs in the cases reviewed only 8 were complete. Thirty were fixed to the first rib and 130 were free. The clinical classification into cases without symptoms and cases with vascular

nervous or objective symptoms is simple and satisfactory. Symptoms are present in about 10 per cent of cases. They are characteristically late in their development a fact probably explained by the difference in the growth of the numerous structures which must be involved before symptoms occur. In 28 of 60 cases there was a tumefaction in the supraclavicular space and in 36 a palpable tumor. Not infrequently the onset of symptoms was preceded by trauma. Nervous symptoms are most common and may be referred to sensibility, motility, trophic, reflex or sympathetic function. Frequently the vague pains are referred to parts of the body other than the arm. The vascular symptoms may be arterial or venous. The presence of a pulsus differens and a difference in the blood pressure are common but not constant. In a number of the cases reviewed the differential diagnosis from apical tuberculosis was important. In a few of them the two conditions were associated. In 28 per cent of the cases there was an associated scoliosis of the cervicodorsal spine.

A LOUIS ROSE, M.D.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

Hyland H. H. Thrombosis of Intracranial Arteries. A Report of Three Cases Involving Respectively the Anterior Cerebral Basilar and Internal Carotid Arteries. *Arch. Ne. & Psych.* 1933 xxx 342

The author reports three cases of cerebral thrombosis illustrating the syndromes associated with softening in the distribution of the anterior cerebral basilar and internal carotid arteries. Because of the infrequency of primary thrombosis of cerebral arteries other than the middle cerebral artery the associated clinical syndromes are somewhat unfamiliar and may sometimes pass unrecognized.

The first case was of interest because of the symptoms and clinical findings of bilateral thrombosis of the anterior cerebral arteries and the post-mortem findings of an anomalous distribution of these arteries. The arteries joined to form one long stem which divided into two stems on the dorsum of the corpus callosum. A thrombus was present in the common trunk.

According to the author the principal symptoms arising from occlusion of one anterior cerebral artery are: (1) paralysis of the opposite lower limb due to ischemia of the cortical leg area (2) ideomotor

apraxia affecting the left arm whether the limb is ipsilateral or contralateral as a result of softening of the anterior part of the corpus callosum and (3) psychomotor disturbance in the upper limb of the same side as the paralyzed leg. Hyland ascribes the mental reaction of euphoria with freedom from inhibitions which occurred in his case to the bilateral lesion rather than to a generalized circulatory disturbance.

The clinical picture in the case of thrombosis of the basilar artery was considered by the author to be characteristic of a lesion of the brain stem. The manifestations were those of bilateral pyramidal disease affecting the limbs cranial nerve palsies which at times were on the side opposite the paralyzed limbs nystagmus pupillary changes glycosuria and a termination suggesting medullary failure.

The third case reported presented the syndrome known as carotid hemiplegia which is characterized by blindness of the eye on the side of the lesion and hemiplegia on the opposite side. Because of the rarity of primary thrombosis of the internal carotid Hyland was unable to account for its presence in this case. The fact that the patient was convalescing from severe pneumonia when the cerebral symptoms developed suggests that the pneumonia was a predisposing factor in the development of the thrombosis. HARRIS HYLAND M.D.



Drawing of the circle of Willis (Case 1) showing anomalous distribution of arteries.

Eisenberg C. A. and Gotten V. The Results of Conservative Operations Compared with Those of Radical Operations for Cerebellar Medulloblastoma. *Bull. N. Y. Coll. of Surg.* 1933 iii 33

The authors review a series of twenty three histologically verified cases of medulloblastoma from the surgical service of the Neurological Institute of New York. The object of their study was to determine whether conservative surgical procedures characterized by wide decompression followed by X-ray therapy or more radical operations for surgical eradication of the tumor plus X-ray therapy give the best results from the standpoint of operative mortality and survival.

They found that the average period of survival of all patients who received from one or more operations was eighteen and three tenths months. In the ten cases in which only a conservative operation was done it was seventeen and five tenths months, whereas in the cases in which a more radical procedure was done primarily or after a conservative procedure it was sixteen and five tenths months.

The operative mortality of all operations was 20.5 per cent and the total case mortality 30.4 per cent. Twelve patients were operated upon conservatively

twenty three times with a reported operative mortality of 13 per cent and a case mortality of 15.5 per cent. (This latter figure appears to be an error—ABTRACTOR.) Eleven patients were operated upon by the radical procedure 11 times with an operative and a case mortality of 36.3 per cent.

The authors regard the relatively low operative mortality after conservative surgical procedures as a factor of importance in favor of conservative surgery for cerebellar medulloblastomata. They believe that the immediate benefit from the radical operation is apparently produced by the decompression rather than by the incomplete removal of the tumor and that the final result as regards length of survival is a consequence of the roentgen therapy of these radiosensitive growth.

They conclude that in the present status of the surgical treatment of cerebellar medulloblastomata conservative surgery has given better immediate results than attempts at radical extirpation and from the standpoint of length of survival it has given results at least as good as those obtained by the radical method.

HARVEY HAVEN, M.D.

Heymann, E. Brain Suture (Uebe die Gehirnsnaht). *Med. Abh.* 333-493.

In modern traumatic surgery primary suture of the wound is attempted whenever possible. An exception is believed to be necessary only in wounds of the brain. The author states that this theory is erroneous as the brain may be sutured if it is brought into a condition which permits suturing.

When the brain is to be sutured it must be exposed widely enough for the wound to be visible in all directions. The soft parts and the cranial coverings must be opened widely and the dura split extensively in order to permit complete removal of blood clots and macerated tissues. The brain should be dehy-

drated by intravenous injections of concentrated glucose solution. The use of the electric knife is recommended to prevent venous hemorrhages. Arterial hemorrhages necessitate ligation. After wound toilet described it is usually possible to sew the wound edges together with fine catgut sutures. Cutting through some of the sutures is not of great importance. After this suturing careful union of the soft brain coverings is done. This is possible only when the primary suture has been successful. It is of great importance because the cicatrization of the brain wound occurs entirely from the mesenchymal tissue. The possibility of brain prolapse is best avoided when the suture of the pia arachnoid holds. If this suture is not made neither an exact dural suture nor the best plastic will prevent prolapse and the dreaded cerebrospinal fluid fistula.

The author recommends wound suture of the brain in operations for traumatic epilepsy and operations for tumors especially large arachnoidal endotheliomata. The wound bed cannot always be closed by suture after the removal of huge tumors and when the ventricles must be opened in the course of operation brain suture will not prevent superficial collection of cerebrospinal fluid or the formation of cerebrospinal fluid fistulae. Suture of the ventricular wall does not lead to the same rapid healing by scar formation as suture of other tissues. This is explained by the scarcity of mesenchymal tissue in the deeper medullary layer. Therefore the scar formation must proceed from the surface inward.

The author has found that brain suture yields the best result in wounds of the cerebellum. Resection of one half of the cerebellum can be done in such a way that the outer surface covered by the arachnoid is preserved. A meningeal suture can then be carried out very easily. Cerebrospinal fluid fistulae develop very rarely.

W. MANDEL (Z)



# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Wolpers G. The Bleeding Breast (D. blutende Mamma) 1 ch f kl Ch 933 clxx 447

Hitherto the bleeding breast has been studied only from the standpoint of the possible development of carcinoma its clinical aspects or its histological basis. The author has studied bleeding from the breast as a phenomenon in itself. He studied the bloody secretion occurring in the breast in the absence of pregnancy and lactation. The bloody appearance is due to destruction of the red blood corpuscles. Wolpers distinguishes between a spontaneous secretion and one which occurs only on pressure and between a temporary and a permanent secretion. When the latter occurs at definite intervals it may be described as intermittent and when it occurs in association with menstruation it may be designated as cyclic.

In women the diseases of the breast of practical importance which may cause bleeding are (1) mastopathy (2) cysto-epithelioma and (3) carcinoma. The author reports two cases due to the first and second conditions and eight cases due to the third. In addition he reports eight cases in which there were no positive findings on palpation and only a clinical examination was made.

In the male bleeding from the breast is due to cysto-epithelioma and carcinoma. The author adds two cases to fourteen collected from the literature. Up to the present time no definite relationships between the blood, the bleeding time and the findings of palpation have been established. With regard to cause of bleeding breast without palpatory findings the author rejects the hitherto prevalent view of Klöse and his co-workers that the condition is precancerous and the breast should be radically removed. When palpation is negative he recommends expectant care. Max Brown (Z)

Krauss F. A Contribution on the Nature and Etiology of Lipogranulomas of the Mammæ (Beitrag zur Ätiologie der Lipogranulomatose der Mammæ) Zeitschrift für Chirurgie 933 p 7

The author reports a case of bilateral lipogranulomatosis of the breast. The patient was a woman fifty-one years old who had suffered a mild attack of tetanus nine years previously following superficial abrasions. At that time she received injections of anti-tetanus serum in the upper inner quadrant of each breast. Soon a walnut sized tumor developed in the upper outer quadrant of the right breast and a somewhat larger tumor in the upper inner quadrant of the left breast. Both tumors were removed and in the left side breast cysts with a fatty oil content were opened.

Microscopic examination of the tumor on the right side showed fatty tissue infiltrated by granulation tissue small foci of necrosis with giant cells here and there an area of calcification with fibrous encapsulation and scattered histocytes some of which formed xanthoma cells. The changes in the tumor on the left side were on the whole similar to those in the tumor on the right side. The lining of the wall of one of the larger cysts was formed by large light cells (xanthoma cells) and squamous epithelial cells of apparently metaplastic origin. For nine years both granulomata had remained unchanged and showed no tendency to grow. E. Price Walker (Z)

## TRACHEA, LUNGS AND PLEURA

Nehrl L W and Alexander J. An Estimate of the Value of Phrenic Nerve Interruption for Phthisis Based on 634 Cases. J Thoracic S 1933 11 549

The authors report the results of 634 phrenic operations for phthisis. The present status of 612 (93.5 per cent) of the patients is known. Of 302 patients subjected to a phrenic operation alone 21 have been traced. In 34 per cent of the latter the condition is apparently cured or arrested in 35 per cent it is apparently a rested quiescent or improved in 1 per cent it is stationary and in 5 per cent it is worse. Fourteen per cent of the 272 patients are dead. More than half of the patients in whom the condition has been cured or arrested were under treatment in sanatoria for from eight to thirty six months before the operation.

Of 215 cases with a pulmonary cavity in which the attempt was made to close the cavity by phrenic paralysis alone a successful result was obtained in 38 per cent. Of 176 cavities which remained open after two or more months trial of pneumothorax 59 per cent were closed by subsequent phrenic paralysis. Therefore 46 per cent of 331 cavities were closed by phrenic paralysis.

Of 81 traced patients without cavitation in whom phrenic paralysis was induced following an unsatisfactory pneumothorax the condition was arrested in 42 per cent and improved in 50 per cent. Seven per cent of the patients are dead.

In the cases of 66 patients phrenic paralysis failed to cause satisfactory improvement and pneumothorax thoracoplasty or some other supplementary operation was done subsequently. Of these patients the condition was arrested in 11 per cent improved in 36 per cent remained stationary in 3 per cent and became worse in 7 per cent. Twelve per cent died and 11 per cent could not be traced. In 26 per cent of the 66 patients the induction of pneumothorax was attempted but was impossible.

In the entire series of 654 patients phrenic paralysis met the authors' expectations its effects ranging from symptomatic relief to complete arrest of the tuberculois. In no case was the phrenic paralysis directly or indirectly responsible for death.

The best results were obtained in case of limited lesions which were relatively recent and contained fibrous tissue young enough to be capable of considerable contraction. The results were poorest in cases of extensive fibrotic lesions with large stiff walled cavities.

J. A. L. LATIMER, M.D.

Weinberg J. A. Iodized Oil in Bronchectasis Including a Study of Two Cases Following Lobectomy. *Am. J. Surg.* 1933, 54:5.

Examination of lobes of lungs removed by the author in two cases of bronchiectasis revealed the presence of iodized oil almost three months after its introduction. The retention of the oil was not confined to the phagocytic cells; it could be identified in the majority of the cellular elements present.

Autopsy performed on guinea pigs and rabbits after the injection of iodized oil showed various degrees of atelectasis and pneumonitis depending apparently on the amount of oil used. The retention of the iodized oil suggested to the author its therapeutic advantage in cases in which prolonged contact with the tissues is desired.

FRANKLIN E. WATSON, M.D.

## ESOPHAGUS AND MEDIASTINUM

Gott R. Jr. Spontaneous Rupture of the Esophagus with a Report of Four Cases. *Am. J. Surg.* 1933, 41:1-400.

Gott reports four cases of rupture of the esophagus all of which were fatal and in all of which studies were made before death and at autopsy.

Case 1: as that of a woman forty-seven years of age who after a heavy meal became nauseated and had a violent attack of vomiting. During the vomiting she experienced a sudden excruciating pain in the chest and coughed up a small amount of blood. Subcutaneous emphysema of the front of the neck and râles in both lungs then developed and were followed by bronchopneumonia and pleurisy with fluid in the left chest. Thoracentesis removed fluid from the pleural cavity which had a very offensive odor and contained free hydrochloric acid. Thoracotomy was done to promote adequate drainage. The patient died on the seventeenth day. Autopsy disclosed in the lower end of the esophagus a rent 7 cm. long extending through the cardia into the stomach.

Case 2 was that of a woman fifty-two years of age who was brought to the hospital with a history of head cold with chills for three days. Death occurred almost immediately after her admission. Autopsy showed a meningococcal meningitis with a yellow purulent exudate over the base of the brain and a tear in the esophagus 2 cm. long which extended upward from the diaphragm. The tear had occurred shortly before death.

Case 3 was that of a sixteen-year-old girl with meningococcal meningitis complicated by bronchopneumonia. Autopsy revealed a tear 6 cm. long in the esophagus just above the diaphragm which had occurred shortly before death.

Case 4 was that of a man sixty years of age who developed bronchopneumonia after the resection of a duodenal ulcer with gastroenterostomy. At autopsy two perforating ulcers were found in the lower end of the esophagus.

J. DANIEL WILLEMS, M.D.

Offergeld H. The Development of Secondary Ovarian Carcinoma Demonstrated in a Case of Primary Esophageal Carcinoma. *Int. J. Cancer* 1933, 1:1-34.

In a case of clinically proved carcinoma of the esophagus developing in a woman just past the menopause tumors proved to be carcinomata on histological examination were found in both ovaries. The relationship between such tumors developing in different locations is discussed. It is assumed that bilateral ovarian carcinomata are secondary to a primary carcinoma elsewhere in 77 per cent of cases and are primary in the ovary in only 36.6 per cent. The frequency of involvement of both ovaries is attributed to the fact that after penetration of the serosa by a focus in the abdominal cavity the space of Douglas acts as a catch basin for cellular structures in the abdominal cavity. According to Ribbert the cells fall by gravity into the deepest part of the cavity and therefore settle most frequently near the ovaries. In addition there is the possibility of transportation of such loosened cells through the lymphatics in the abdominal cavity. From the space of Douglas numerous lymphatics lead to the ovaries. In cases of carcinoma situated in the thoracic cavity it appears that the cells are usually transported to the abdominal cavity and organs by the lymph route even in a direction opposite to that of the natural flow. The transportation is effected through the lymphatics of the diaphragm either directly into the abdominal cavity or by way of the retroperitoneal gland. Hence the path can be traced backward into the lesser pelvis and in the bifurcation of the aorta. In the case of esophageal carcinoma reported by the author all of the lymphatics in the excised specimen were found filled with carcinoma cells.

Endocrine influences are assumed to be responsible for the development and unusual size of the ovarian tumors as the administration of ovarian juices increases the growth of the tumors and favors their spread into other places. Recently Kermanner has suggested that the large size of the tumors may be due to the wave-like increases in the blood flow in the ovaries which render conditions more favorable for the lodgment and growth of the misplaced cells.

The author comes to the conclusion that all secondary ovarian carcinomata are not daughter tumors in the true sense but extensions of a primary tumor.

to the ovary occurring by retrograde transportation by way of the lymphatics. This theory is supported by the monomorphic character of the tissue structure which is in contrast to the polymorphism of true daughter tumors transported by the blood stream.

Clinically the secondary tumors in the ovaries are usually manifested first while the primary tumor in the gastro-intestinal tract or thorax remains latent.

The author advocates active therapy. He recommends removal of both ovarian tumors together with the uterus at the time of the operation for the removal of the primary tumor or at a second operation.

To date seventeen cases of complete recovery are known.

A. SALOMON (L)

Caussade G. Decourt J., and Duroulet A. A Case of Mediastinal Dermoid Cyst of the Pulmonary Type with Hemoptysis. *Terminati* n by Metastatic Septic Encephalitis (Kyste dermoide du médiastin form pulmonaire à hémoptysie. Terminaison par encéphalite septique métastatique). *A. le méd-ek r d L'oppor* re p. 933 70, 246

The case reported was that of a man twenty five years of age. The authors compare the tumor with the description of mediastinal dermoid given by Staffieri and Sergeant. Teratomatous tumors of this type may lie in the anterosuperior or antero-inferior part of the mediastinum. They are usually found on the right side. They give rise to localized or diffuse remittent or continuous unilateral thoracic pain. After the painful phase hemoptysis begins. The hemoptysis is difficult to distinguish from that of tuberculosis although the blood is more apt to be dark and the Koch bacillus is absent. The roentgenogram shows a suggestive shadow surrounded by pericapsular inflammation.

The only pathognomonic sign is the expectoration of hairs and masses of sebaceous tissue. The latter may be identified by its reaction to osmic acid.

Cure may result from calcification of the mass or may be brought about by surgical removal if the mass is sufficiently large and accessible. Death may result from pulmonary suppuration, cachexia, cancerization or septic embolism. In the case reported by the authors the embolus lodged in the brain tissue giving rise to a metastatic septic encephalitis.

MARSH W. POOLE M.D.

### MISCELLANEOUS

Bársony T. Hiatus Herniæ (Ueber die Hiatus Hernia). *Arch f. klin. u. exp. med.* 1933 10, 349

Hiatus hernia can be diagnosed only roentgenologically and the smaller ones only with the patient in the reclining position. Even five years ago Bársony did not completely agree with Ackermann. He considered confusion of these hernia with gastric diverticula and epiphrenic oesophageal diverticula to be impossible. However the portion of the oesophagus which is constricted by a contraction above the diaphragm may be easily mistaken for a hiatus hernia (pseudohernia). In cases in which the

constricted portion appears wider than the remainder of oesophagus the differentiation is rendered more difficult. Moreover the folds which under certain circumstances are visible in the hiatus do not indicate a hiatus hernia definitely because they may occur also in conjunction with dilatation of the oesophagus. Therefore Bársony thinks that these frequent plum sized oesophageal constrictions his pseudohernia have been regarded erroneously as hiatus hernia by later observers. Chaoul has confirmed his findings. Bársony considers a hiatus hernia to be present when with the patient in the reclining position the oesophagus empty and the stomach full an epiphrenic shadow rounded off on top and communicating widely with the stomach appears above the hiatus on the repeated application of abdominal pressure.

In contradistinction to Sauerbruch Chaoul and Adam believe that true hiatus hernia are not very frequent. However a negative diagnosis is of no practical significance. In none of Bársony's cases of small hiatus hernia did incarceration occur.

In discussing the pathogenesis of hiatus hernia Bársony emphasizes that such hernia are not congenital as they occur only in old persons. He ascribes them to loosening of the periesophageal tissues in the hiatus and increased intra abdominal pressure (Pleibbruch). However he has not yet been able to prove experimentally the contribution to intra abdominal pressure by Saito, Bergmann and Knothe attribute an important rôle to shrinking processes in the upper oesophagus and contraction of the longitudinal muscles.

Hiatus hernia should be borne in mind in the examination of all patients with complaints referred to the oesophagus and stomach.

When other conditions are also present these must be treated first. As even large hiatus hernia may exist without symptoms there should be no hurry to operate. It is still a question whether a laparotomy or a transthoracic operation should be done. Many surgeons believe that a congenitally shortened oesophagus is a contra-indication to operation. This is not necessarily true as Harrington of the Mayo Clinic has shown that in cases of shortened oesophagus the cardia can be brought up under the diaphragm even when the diaphragm is paralyzed.

FRA. Z (2)

Wagner A. Hernia Through the Oesophageal Hiatus (Ueber die Hernia hiatus oesophagi). *H. f. Td.* 933 p. 257

Hernia through the oesophageal hiatus have been found to be more common than was formerly supposed. Their formation is favored by all conditions causing an increase of the intra abdominal pressure such as obstipation, pregnancy, prostatic hypertrophy, long continued bodily exertion, trauma, chronic cough, ascites and loss of fat and muscle tissue. Less common predisposing causes are scarring of the oesophagus which pulls the stomach up into the thorax and congenital defects. Among the

most common symptoms is pain. This is usually localized in the region of the upper epigastrium and occurs before, during or after meals or periodically. It may be provoked or relieved by changes of position. Dysphagia is a less common but important symptom. Other symptoms are belching, pyrosis, vomiting, nausea, hæmatemesis, occult hæmorrhages and melæna.

In the differential diagnosis it is necessary to rule out epiphrenic and subphrenic œsophageal diverticula, a cardiac antrum of the œsophagus, cardiospasm, other diaphragmatic herniæ, relaxation of the diaphragm in the region of the œsophageal hiatus and diverticulum of the fundus of the stomach. The patient should be examined in the standing and reclining positions. Fluoroscopy after an opaque meal is recommended. When the œsophagus is freely patent and roentgen examination with the patient in the reclining position shows above the level of the diaphragm para-œsophageal shadows which are continuous with the stomach, the presence of a hiatus hernia may be assumed with considerable certainty. The diagnosis is aided by enlarging the epidiaphragmatic shadows by increasing the intra-abdominal pressure. In the standing position diverticula of the œsophagus are filled from the œsophageal lumen and not from the stomach and may show a retention after the stomach has been emptied. In contrast, hiatus herniæ empty simultaneously with the stomach. Confusion of the condition with a cardiac antrum of the œsophagus, cardiospasm or cancer of the œsophagus is easily avoided.

The author reports 11 cases—4 those of men and 7 those of women between forty and seventy years of age—which were found in 3,000 gastric examinations. In all of these cases a para-œsophageal hiatus hernia was demonstrated by X-ray examination. The clinical records show that a diagnosis could not have been made from the clinical symptoms alone. The necessity for fluoroscopic examination for a correct diagnosis is therefore apparent. In addition to the fluoroscopic examination, a complete gastric examination should be made.

Hiatus herniæ occur most frequently in old persons with weak musculature and loss of fatty tissues.

As reports of end results from operative treatment are still lacking, no definite conclusions may be drawn with regard to the best therapy. Dietetic treatment may be beneficial. (HAGEN, Z.)

Neumann R. Hiatus Insufficiências and So Called Hiatus Herniæ. Anatomical Investigations and Mechanical Tests in the Region of the Œsophageal Hiatus of the Diaphragm. (Hiatus insuffizienz und sogenannte Hiatushernie. Anat. m. ch. U. tsu hu gen v. d. m. ch. s. ch. Præf. gen. m. Geb. t. d. Hiatus Œsoph. ge. s. d. Zwerchfells.) *J. h. f. path. An.* 1933 cclv xi 270.

The gastroduodenal syndrome of Roemheld and the epiphrenic syndrome of von Bergmann are supposed to be related to hiatus herniæ or hiatus insufficiency.

They are the third type of herniæ in the classification proposed by Ackerslund in which the unshortened œsophagus lies in the pressure sac. Sauerbruch, Chaoacel and Adam consider the shadows to indicate epiphrenic dilatations of the œsophagus similar to the phrenic ampulla.

One hundred cases were studied anatomically by a specially planned dissection technique. The findings showed that the cardiac incisura is located where the fornx of the stomach turns to the left and upward. At this point there is a groove, the cardiac sulcus or Arnold's groove. The upper sulcus, the sulcus hiaticus, is sharper than the cardiac sulcus. Between the two is the cardiac antrum, the average length of which is 3.3 cm. By the term cardia the anatomist means the mucous membrane border between the squamous epithelium of the œsophagus and the glandular epithelium of the stomach. This may be distributed over the entire cardiac antrum but most often lies next to Arnold's groove. Transverse borders are not determinable and longitudinal folds pass over into the lesser curvature.

The œsophageal hiatus of the diaphragm shows very little uniformity in the arrangement of the muscular fibers. It may even be tendinous. The right muscle of the crus is usually the more powerful. The cleft passes downward from left to right and is of varying breadth, being broader in pyknic than in asthenic persons. The entire pericardiophrenic tissue lacks muscle fibers but contains elastic tissue with many nerves and masses of fat. The peritoneum passes in a more gentle curve up to Arnold's groove and applies itself here or beyond Arnold's groove to the gastric wall.

Caudal to the entrance of the hiatus, more or less marked dilatations are found. These are œsophageal bulbs, some of which are isolated and others of which resemble a string of pearls on the œsophagus. They differ particularly from the bulbi antecardiaci, which are below the sulcus hiaticus, vary in size from that of a walnut to that of a duck egg and are not always present. They differ also from the bulb-positive and the bulb-negative groups which can be recognized immediately or when slight pressure is exerted on the abdomen or stomach. It is evident without mechanical proof that these bulbs include a subgroup over the entrance of the hiatus. In the second type the bulbs extend toward the hernia. Eighty-seven and five tenths per cent of the cases are bulb-negative and only 12.5 per cent are bulb-positive. In the former the sulcus hiaticus lies at the entrance of the hiatus and on pressure over the stomach the œsophagus extends only slightly upward. The upward movement of the hiatic sulcus and the antrum varies between 2.15 and 4 cm. Arnold's groove has never been demonstrated above the entrance to the hiatus. Previous to displacement the cardia never lies above the entrance to the hiatus but after displacement it may extend as far as 2.5 mm. above the entrance in 28.5 per cent of the cases and is found in the hiatus in 6.7 per cent and below the hiatus in 65 per cent. Even after the

to the ovary occurring by retrograde transportation by way of the lymphatics. This theory is supported by the monomorphic character of the tissue structure which is in contrast to the polymorphism of true daughter tumors transported by the blood stream.

Clinically the secondary tumors in the ovaries are usually manifested first while the primary tumor in the gastro intestinal tract or thorax remains latent.

The author advocates active therapy. He recommends removal of both ovarian tumors together with the uterus at the time of the operation for the removal of the primary tumor or at a second operation.

To date seventeen cases of complete recovery are known.

A. SULOZOV (Z)

Caussade G, Decourt J and Durollet A. A Case of Mediastinal Dermoid Cyst of the Pulmonary Type with Hemoptysis. Termination by Metastatic Septic Encephalitis (Kyste dermoïde du médiastin forme pulmonaire à hémoptyses. Terminaison par encéphalite septique métastatique). *Arch med-chir et appl r resp* 1933 in 246

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FRANZ (Z)

Wagner A. Hernia Through the Esophageal Hiatus (Überrück Hernia hiatus esophagei). *Id* 1933 p 257

Hernia through the esophageal hiatus have been found to be more common than was formerly supposed. Their formation is favored by all conditions causing an increase of the intra abdominal pressure such as obstipation, pregnancy, prostatic hypertrophy, long continued bodily exertion, trauma, chronic or acute ascites and loss of fat and muscle tissue. Less common predisposing causes are narrowing of the esophagus which pulls the stomach up into the thorax and congenital defects. Among the

# SURGERY OF THE ABDOMEN

## GASTRO INTESTINAL TRACT

Raiford T S Carcinoid Tumors of the Gastro Intestinal Tract *Am J Surg* 1933 xvii 803

According to the generally accepted theory carcinoid tumors have their origin in the so called chromaffin cells of the gastro intestinal mucosa originally described by Kulitschitzky in 1897 These cells the origin and function of which are still a matter of speculation are most numerous in the region in proximity to the ileocecal valve

The typical carcinoid tumor is a small firm rounded mass which can be moved freely beneath the mucous membrane and presents a bright yellow surface on cut section The cells which supposedly arise from the mucosa and extend into the submucosa are arranged in groups and columns surrounded by a dense stroma of connective tissue and hypertrophied smooth muscle At times the stroma suggests a capsule and in the larger lesions often constitutes the bulk of the tumor mass The microscopic picture is one of small regular cells with a granular cytoplasm which have an affinity for silver and nuclei that are uniform and contain many chromatin particles Although carcinoids are generally regarded as benign tumors the author has collected from the literature 25 cases in which metastasis occurred to regional lymph glands and more distant sites most commonly the liver

Raiford's material consists of 29 carcinoids which were found among 1611 neoplasms of the gastro intestinal tract examined in the pathological laboratories of the Johns Hopkins Hospital Seventeen were situated in the appendix 9 were in the small intestine of which seven were in the ileum were in the colon and 1 was in the stomach Therefore 83 per cent were situated in the region close to the ileocecal valve where the Kulitschitzky cell are known to be most numerous

The author states that a carcinoid of the stomach small intestine colon or rectum usually does not cause symptoms until it is sufficiently large to produce obstruction In carcinoid of the appendix the symptoms are those of chronic appendicitis because of the comparatively early obliteration of the lumen Of the author's 29 cases metastases had occurred in 6 (20 per cent) Although the incidence of carcinoid tumors was higher in the appendix only 1 of the 1 carcinoid in that area was classified as malignant 10 of the 9 tumors of the small bowel 1 gastric tumor and the tumor of the large bowel were malignant Although the large gastric tumor and the tumors of the large bowel did not produce the typical constitutional manifestations usually associated with malignancy i.e cachexia anemia and loss of weight

The author states that it is impossible to differentiate the malignant from the benign tumors morphologically and that they are all to be considered potentially malignant Because of their extremely slow rate of growth malignant characteristics do not appear until late The treatment should consist of extirpation Re section is preferable to local excision The prognosis on the whole is good It is grave only in cases with metastasis and even in such cases a good result may be obtained if the tumor is recognized and operation is performed before the metastases have become widespread

The author's malignant cases are reported in detail in extensive bibliography appended

ARTHUR S W TORREY MD

Hurst A F The Unity of Gastric Disorders *B M J* 1933 viii 99

An investigation of the anatomy and physiology of the stomach of healthy young adults of both sexes showed that under perfectly normal conditions there is considerable variation from the average In the 80 per cent in which the variations occur within comparatively narrow limits the anatomy and physiology of the stomach are so perfectly adjusted to the exigencies of ordinary life that the subjects are likely to reach old age without ever suffering from any form of chronic gastric disorders In the development of the hypothesis of the unity of gastric disorders Hurst emphasizes the familial predisposition in the remaining 20 per cent one half of whom are born with a hypersthenic gastric constitution and most of the other half of whom are born with a hyposthenic gastric constitution The hypersthenic group have a hyperchlorhydria often associated with a short high rapidly emptying stomach whereas the hyposthenic group usually have a hypochlorhydria and a long low slowly emptying stomach Both constitutions are compatible with perfect health but under unfavorable circumstances each predisposes to the development of a variety of disease which include gastric and duodenal ulcers carcinoma of the stomach and Addison's anemia These diseases become more and more frequent with increasing age The younger group of healthy individuals examined the fairer criterion they will be of the general population before it has become affected by diseases acquired secondary to a constitutional predisposition A large group comprising healthy persons of all ages such as that reported by Vanzant Alvarez and their colleagues is a selected group from which many of the individuals with hypersthenic and hyposthenic gastric constitutions are excluded Such a group presents an inaccurate picture of the incidence of hyperchlorhydria and hypochlorhydria

greatest upward displacement of the œsophagus the peritoneum never extends beyond the entrance to the hiatus.

In the bulb-positive group a subgroup shows a bulb of the cardiac antrum in which the hiatus groove lies at varying distances above the entrance to the hiatus. In another subgroup neither a bulb formation nor an epiphrenal groove is seen on simple inspection but both of them appear when pressure is exerted over the abdominal cavity. Arnold's groove and therefore the entire cardiac antrum extends beyond the entrance to the hiatus in about one third of the cases. In 61.5 per cent of the cases the cardia or epithelial border also extends up to 4.8 cm. beyond the entrance to the hiatus. Here again the peritoneum never extends beyond the entrance to the hiatus. The bulbs are always free from it.

The average age of persons afflicted with bulbs is sixty and a tenth years.

The hiatus groove is distinct even without crural compression. Arnold's groove has no circular musculature. External differentiation between the stomach and the œsophagus is impossible as the border of the mucous membrane lies at varying heights. Nevertheless the author believes that it lies most frequently

at Arnold's groove. His investigations show that the antrum belongs partly to the œsophagus and partly to the stomach. However, this is true only of the mucous membrane. From the standpoint of function it may be assumed definitely that the sulcus hiaticus is an occlusive groove. With regard to occlusion at Arnold's groove opinions differ. However, according to Neumann it represents a distinct line of demarcation—an occlusion. The œsophageal hiatus represents a valvular arrangement. What is the pathological explanation of the variation in the position of the sulcus hiaticus above the entrance to the hiatus which occurs only in the bulb-positive group? In 83.9 per cent of these cases there was pulmonary emphysema and in 58.1 per cent the pyknic habitus in which the hiatus is wider. The increased negative pressure is responsible for the bulb formation as suction is exerted toward the thoracic cavity. Another factor is the disappearance of elastic and fatty tissue due to age. The bulb formations of the cardiac antrum represent the so-called insufficiencies of the hiatus or hiatus herniæ. They are by no means herniæ as peritoneum is not present. It is of interest that clinical symptoms were never present in the author's cases.

FRANK (2)





The presence of mucus in the ordinary fractional test meal indicates an associated gastritis. However mucus is rarely present in excess except in hyposthenic individuals with either hypochlorhydria or achlorhydria. This is due to the fact that the hypersthenic stomach is able to secrete only a very little mucus as compared with the hyposthenic stomach. In the 10 per cent of hypersthenic patients with constitutional hyperchlorhydria there is ample protection against mechanical and chemical irritants if these are taken when the stomach is full but as hyperchlorhydria is usually associated with rapid gastric emptying the stomach is empty for a much longer proportion of the day or night than in the average individual and there is much more opportunity for mucosal damage by alcohol tobacco or drugs. Accordingly the 10 per cent of persons with constitutional hypochlorhydria due to inadequate gastric function are likely to develop gastritis which sooner or later leads to achlorhydria. This occurs in spite of the attempt made by the stomach to protect itself by the secretion of mucus. It is a remarkable fact that the type of stomach which because of its deficiency in gastric juice most often requires a protective coating of mucus is most capable of producing it.

The functional efficiency of an organ is always reduced when the organ is inflamed. Therefore in chronic gastritis secretion is reduced to a degree which varies with the severity and duration of the inflammation. The amount of acid present in the stomach in a test meal depends upon the constitutional type of the stomach. Thus the hyperchlorhydria of an individual with a hypersthenic gastric constitution becomes less extreme or may be replaced by a normal curve of acid or in exceptional cases of hypochlorhydria. It is significant that when medical treatment has resulted in the healing of an ulcer and the disappearance of gastritis the acidity is almost always higher than it was before. The hypochlorhydria of individuals with hyposthenic constitutions is almost always replaced eventually by complete achlorhydria as the result of associated gastritis. In most cases this can be overcome by removing the exciting cause. In 87 per cent of thirty-four cases of achlorhydria treatment of the gastritis led to the return of free acid. The reduction of acid in these cases is due to depression of the gastric secretion by the inflammation and the excessive mucus secreted.

In sixteen cases of gastric ulcer and thirty-two cases of duodenal ulcer a secondary test meal at the end of treatment showed an increased acidity in all but eight. In six examination revealed hyperchlorhydria and too high normal curves. In cases of ulcer the secretion of acid by the stomach continues throughout the night whereas in the normal stomach this practically never occurs. Because of the deficient capacity for secreting mucus which is a characteristic of the hypersthenic stomach the stomach of this type lacks the protection against damage which in the hyposthenic stomach is afforded by a layer of mucus. It has been suggested

that the absence of mucus is due to its digestion by gastric juice but mucus differs from other proteins in the extreme slowness with which it undergoes peptic digestion.

Achlorhydria is found in about 99 per cent of cases of Addison's anemia. In these cases the absence of hydrochloric acid from the gastric secretion is associated with absence of Castle's intrinsic factor—a substance required for the natural stimulation of hæmatopoiesis. The primary condition responsible for the achlorhydria, the loss of the intrinsic factor and the ultimate development of the anemia and subacute combined degeneration of the cord is gastritis.

The facts cited show that most organic disturbances of the stomach are secondary to exciting causes which are so common that very few persons reach old age without coming under the influence of one or more of them at some time in their lives. Fortunately four-fifths of the population have stomachs which are endowed with sufficient resistance to escape damage and it is only the remaining 10 per cent who are likely sooner or later to develop an organic disease. SAMUEL J. FOGELSON, M.D.

Kallio K. E. *Intestinal Knot Formations* (Die Knotenbildung des Darmes) Acta Chir. Scand. 1932 1: 5 pp. 221.

This article discusses the form of ileus in which a true knot is formed in loops of intestine. A fixed part of the intestine generally acts as the passive part of the knot and during the active movements of digestion at night a loop of free intestine rolls around it and becomes tied. A single loop of intestine may sometimes form a sailor's knot.

To the 84 cases reported in the world literature the author adds 7 unpublished cases which he found recorded in the hospitals of Finland. One hundred and twenty-two (75.8 per cent) of the total number of 161 cases were seen in Finland. All of the subjects were males who did hard manual labor and lived on coarse food. The author believes that a large amount of poorly prepared food deficient in calories such as that eaten by the native population of Finland is the primary cause of intestinal knots. Other factors are a long intestine particularly a long sigmoid loop and a fixed terminal ileum such as are found frequently in the men of Finland.

In the typical case of intestinal knot formation the patient is seized with violent pain in the night and comes to the hospital within twenty-four hours. The marked deterioration of the general condition is out of proportion to the short duration of the illness. The abdomen is distended but often the distention is not very great. The abdominal walls are rigid and painful. Before operation it is usually impossible to distinguish ileus due to an intestinal knot from ileus due to torsion although the postoperative general condition in the former is suggestive.

Among the cases reviewed the knot was in the sigmoid in 134, in the ileocecal portion of the intestine in 2 and in the small intestine in 25. 12

cavity. That primary closure is indicated in all cases of diffuse peritonitis including the most severe is evidenced by the statistics of the Malmö material. Immediate primary suture was done in 67 per cent of all cases and primary closure plus local drainage of the appendix bed in an additional 25 per cent. In only 4 per cent was an attempt made to drain the general abdominal cavity.

The mortality statistics of this series compare favorably with those from other institutions. The incidence of immediate and late wound infection and of postoperative hernia was very low and the period of hospitalization very short in comparison with the other series. The only complication seen more frequently in non drained cases was secondary abscess in the cul de sac of Douglas but this is of no great importance. One of the greatest advantages of primary suture is the infrequency of postoperative ileus. The experiences of the Malmö Clinic with primary suture over a period of twenty two years lend strong support to treatment without drainage for all cases of non circumscribed peritonitis.

In reviewing other therapeutic measures in the treatment of this type of peritonitis the author states that mopping and irrigation of the peritoneal cavity are equally advantageous. However in the use of either great care must be taken to avoid injury to the peritoneum. The use of antiseptic substances or fluids to prevent adhesions is objectionable. The usual administration of fluids, chlorides and stimulants is advocated. Lymphaticostomy is condemned. Polyvalent antiseptic sera are valuable prophylactic and therapeutic adjuncts and should be employed whenever spreading peritonitis exists or is threatened. Ileus is combatted by the use of drugs, laxative enemata and tubes. Intravenous hypertonic salt solution is of value and in selected cases splanchnic or spinal anesthesia. Repeated or continuous gastric lavage affords great relief. Enterostomy is indicated only in localized or mechanical ileus. Thrombosis and embolism are best avoided by active exercise and getting patient out of bed early.

Circumscribed peritonitis lends itself less definitely to a single plan of management. In cases of not more than five days duration the results are best and the mortality is lowest when operation including removal of the appendix is performed immediately. This is true whether a palpable mass is present or not. In 20 of the author's cases which were so treated the mortality was 6 per cent. In cases of abscess of more than five days duration conservative treatment is safer but in the majority surgery will become necessary later.

An extensive bibliography is appended together with abstract of the histories of about 1250 cases of peritonitis of appendiceal origin.

LEO M. ZIMMERMAN, M.D.

Ludmilla A. Unicevska: Appendiceal my.  
La 1 1933 c 193

In many cases in which appendectomy is performed it is quite easy to be certain that the appen-

dix is definitely abnormal and might have been responsible for the symptoms. In other cases the abnormalities in the appendix are so slight that it seems doubtful whether they could have caused such definite symptoms. In some of both types of case the patient is not benefited by the operation and it is obvious that some other factor besides the appendix was involved. Pain resembling that of appendicitis may occur in the abdominal wall or may be caused by evacuation of the bowels or distention of the caecum.

As the abdominal wall is a fibromuscular sheet it is liable to all the affections of fibrous and muscular tissue. The most common cause of pain in the abdominal wall is weakness of the muscles. In cases of pain due to this cause a diagnosis of visceroprosia is generally made and the discomfort relieved by the wearing of an abdominal belt. The author believes that practically all of the symptoms ascribed to visceroprosia are due to aching of the abdominal wall and have no relation to the viscera.

Constipation of which the patient is often unaware with the presence of dry scybala in the colon is a frequent cause of abdominal pain. Treatment though may be difficult and a prolonged will often result in cure.

Painful distention of the caecum may be brought about by the retention of faeces atony of the caecum spasm of some part of the bowel beyond or mechanical obstruction such as an acute angulation of the colon at the hepatic flexure. For the relief of an atonic distended colon crochocapexia is a valuable treatment. It adds very little to the benefit of appendectomy.

SAMUEL KAHN, M.D.

Guthrie J. Sabotier A. and Vassiloff N. Perforation of the Rectum by Impalement of a perforator.  
Par 933 f 466

Perforation of the rectum by impalement demands immediate surgical treatment to prevent fatal peritonitis or pelvic cellulitis.

Two types of cases are distinguished: (1) those in which a sharp object penetrated the anus directly and (2) those in which the rectal wound was incidental to a perineal injury. The latter type is the more common. Involvement of the peritoneum in rectal wound usually occurs by way of the cul de sac of Douglas. Lesions of various extent may involve any of the perirectal tissue. Frequently rectal wound are complicated by lesions of the bladder, urethra or genital organ and occasionally by lesions of organs high in the abdominal cavity.

Severe external hemorrhage occurs only from perineal wound. Bleeding from the rectum is apt to be largely internal. When the peritoneal cavity has been entered there is muscular rigidity over the lower part of the abdomen. The gravity of the lesion is indicated by the general condition.

Local examination should include inspection through the proctoscope and careful digital palpation. The urinary organ should also be examined.

but its efforts should be directed toward restoring the normal volume of circulating fluid. Postoperative pulmonary complications are not infrequent as patients operated upon for intestinal obstruction are in poor condition. There are a few reports of cases in which tetanus developed. Continuation of the gastrointestinal symptoms, especially those of obstruction, may be due to incomplete relief of the obstruction or a functional obstruction superimposed upon a mechanical obstruction. Patients with such postoperative symptoms should be treated conservatively by gastric lavage. Operations for intestinal obstruction are apt to be followed also by an intestinal fistula. The higher the fistula, the greater its importance. High intestinal fistulae are especially dangerous because of the associated loss of intestinal secretion. The various methods of treating such fistulae are discussed. Even though rather extensive resections of the intestinal tract can be tolerated, they may be followed by severe malnutrition.

ALTO OHSNER MD

Cana e o M Th Histological Changes and the Functional Adaptation of the Small Intestine After Colotomy. An Experimental Study (Sulle modificazioni istologiche e sulla adattamento funzionale del tenue dopo la colomia). *Riv. Chir. exp. appl.* 1933, 1, 2, 4.

The author reports the results of total colectomy followed by end to end anastomosis in four dogs. After the operation the dogs were carefully studied clinically and roentgenologically and sacrificed at the end of three, five and eleven months.

It was found that the terminal loop of the small intestine became almost identical with the excised colon in size and shape and that coincident with these changes there were histological changes the most pronounced of which were hyperplasia and hypertrophy of the tunica muscularis and mucosa. These changes could be demonstrated from the first six months after the operation and were well marked by the tenth or eleventh month.

ELIENE T LEDDY MD

Bauer G The Treatment of Appendicitis Peritonitis (Zur Behandlung des Appendizitis Peritonitis). *Chir. Z. u. Grenzgeb.* 1933, 1, 5, pp.

In a monograph of impressive proportions Bauer analyzes all cases of appendicitis seen at the General Hospital of Malmoe, Sweden during the period from 1896 to 1933 with special reference to the treatment of peritonitis of appendiceal origin. Since 1903 the treatment of peritonitis at that hospital has been stabilized and patients have been admitted reasonably early. Consequently the cases seen since 1903 (39 of the total series of 615) were selected for special study. Among these there were 69 of chronic appendicitis with death in 2 (0.6 per cent) and 208 of acute appendicitis with death in 14 (3.3 per cent). The total mortality was therefore 1.6 deaths per cent.

The treatment of appendicitis peritonitis remains a most important question. Comparative statistics are difficult to evaluate because of the lack of definite criteria as to the presence of peritonitis, the differences in terminology regarding the type of peritonitis and the difficulty of determining the circumscription, extensiveness and severity of the process. The author divides his cases into those of circumscribed and those of non-circumscribed peritonitis and subdivides the latter into mild, moderate and severe cases. His cases of acute appendicitis include 379 without peritonitis or with only serious peritonitis (mortality 0.7 per cent) and 1449 cases with suppurative peritonitis. Of the latter 773 were non-circumscribed and 666 circumscribed. The treatment of non-circumscribed peritonitis has been standardized in the Malmoe Clinic since 1909. Therefore the cases treated since that time, 369 in number, were selected by the author for detailed study. In these cases there were 61 deaths, a mortality of 10 per cent. The plan of management in circumscribed peritonitis has remained essentially unchanged since 1903. Therefore all cases since that date, totalling 66, were included in the study. In this group there were 4 fatalities, a mortality of 6.9 per cent.

Analysis of the cases of non-circumscribed peritonitis reveals wide fluctuations in the mortality curve from year to year and to a lesser extent from one three year period to the next. Of greater significance is the fact that the mortality in the last decade is definitely higher than that in the preceding decade. The mortality increases with the duration of the disease before operation. It is greater in males than in females and highest in childhood and old age. Definite perforation of the appendix was found in about 62 per cent of the cases. The incidence of perforation increases with the duration of the disease and the mortality is about three times as high in cases with as in cases without perforation. The mortality from circumscribed peritonitis exhibits similar fluctuations, although the rate in the last decade was somewhat lower than for the preceding decade. In this group the death rate was higher among females than among males and a relation of the mortality to duration was much less evident. Cases in which the appendix was directed medially or upward were responsible for the greatest percentage of deaths.

The most disputed problems in the treatment of non-circumscribed peritonitis are the advisability of immediate operation in cases of more than forty-eight hours duration and the advisability of drainage of the peritoneal cavity. The author holds that operation should be done in every case irrespective of the duration of the condition as long as the patient is not moribund and that the abdomen should be closed without drainage in all cases of non-circumscribed peritonitis. In cases in which the bed of the appendix is necrotic or granulating or perforating occurs local drainage of the dangerous area is advisable but this is in no way to be interpreted as an attempt to drain the free peritoneal

involvement. According to the authors' experience the larger glands are usually inflammatory and the hyperplasia results from the absorption of septic material from an ulcerated growth. The presence of large palpable glands in cancer of the rectum may be misleading as the enlargement is often entirely of an inflammatory nature. This cannot be determined by palpation. The location of the lymph glands has a most important bearing on the scope of a radical operation. In most cases enlarged glands are found at or above the level of the growth. In the very malignant cases the majority of the lymph nodes are infected. An essential part of the radical operation is removal of the glands as high up as the level of the bifurcation of the superior hemorrhoidal artery. The sheath of the rectum plays a part in limiting the spread of the process. Numerous ections made of the levator ani and external sphincter muscles in the cases reviewed failed to reveal cancer foci. Apparently voluntary muscle resists the invasion of cancer. Spread of cancer of the rectum by lymphatic permeation appears to be a very limited process until the advanced stages of the disease.

In recent years attempts have been made to differentiate between the various grades of malignancy. It is well known that the rapidity of growth and cell dissemination varies greatly and that breast cancer may run a rapid course of a few months or may be present for many years with very slight symptoms of activity or spread. In cancer of the rectum the age of the patient is a factor but the structure of the tumor and its ability to liberate malignant cells are of great importance in the virulence of the disease. Dukes has attempted to group cases of cancer of the rectum according to the depth of penetration of the wall of the rectum and the presence or absence of secondary growths in the lymph glands. From a study of cases so grouped it is apparent that the presence or absence of infection of the lymph glands is of more importance in the prognosis than the extent of the local spread. Many of the cases reviewed are too recent to be of aid in the estimation of the merits of this method of grouping.

Broders grades carcinomata of the rectum according to the histological appearance of the tumors. Lambret has recently called attention to the importance of distinguishing between the true primary mucoid cancer and the adenocarcinoma with mucoid degeneration. The mucoid carcinoma is a malignant hyperplasia of mucus forming elements. In this tumor the cell is large and round and distended with lightly staining cytoplasm. The signet ring appearance is common because of the accumulation of mucus in the cells and ultimately rupture of the distended cell takes place. There is no evidence of glandular formation. In the adenocarcinoma with mucoid degeneration the typical picture is that of an adenocarcinoma. The acini become distended with mucus and ultimately rupture. The lamina propria is compressed and partly destroyed. The presence of mucus in the acini in any quantity indicates that the cells are well differentiated and are attempting to perform their normal function.

Tumors of mucoid degeneration are therefore of a low grade of malignancy while true mucoid cancer is very highly malignant being in fact a degenerating medullary carcinoma.

The authors conclude that the grading of rectal cancers has not yet reached a stage at which it will permit a much more accurate prognosis than that which has been possible in the past. The histological structure may vary considerably in different parts of the growth and the tumor can be graded only accurately by complete examination and by noting the type of structure which preponderates. Conclusions based on examination of only small pieces of tumor are certain to lead to error.

In conclusion the authors review briefly cases typical of the various grades of malignancy and extent of spread showing in each instance the local spread by a large section, the lymph spread by a gland chart and the grade of malignancy by a photomicrograph.

JOHN W. NUZUM, M.D.

#### LIVER GALL BLADDER PANCREAS AND SPLEEN

Lambret O. The Surgical Treatment of Gall Bladder Stasis (Traitement chirurgical de la stase vésiculaire). *Presse méd.* P. 1933, 41, 1097.

The diseases peculiar to the infrahepatic region may be classified into 2 groups: (1) ulcer cancer, cholelithiasis and the inflammatory results of cholelithiasis and (2) certain more or less functional disturbances which are differently interpreted by various authorities. It is with the second group, particularly gall bladder stasis, that this article deals.

In spite of the important studies of Lyon and Chiray there has been no unanimity of opinion regarding the diagnosis, the nature or the treatment of gall bladder stasis. In Lambret's opinion the essential feature of gall bladder stasis is visceroptosis. This may or may not be complicated by perivesicular adhesions. When perivesicular adhesions are present the stasis is atonic and when they are absent it is mechanical and atonic.

In atonic stasis the gall bladder is elongated and mobile and extends beyond the edge of the liver. It can be emptied readily by compression but remains flaccid. In addition to the cholecystostomy described by Chiray there is ptosis. In 6 per cent of the cases calculi are found. Cholecystitis is exceptional. Beside the gall bladder findings there is the general picture of visceroptosis and the atony extends to the stomach and duodenum.

When the stasis is due to a mechanical cause such as perivesicular adhesions ptosis may be absent. However it is present in 8 out of 10 cases. Because of the associated disorders in the infrahepatic region the rôle of the gall bladder in the production of symptoms is difficult to determine exactly. Pain over the gall bladder, asthenia, headaches, vomiting and icterus are symptoms of some significance. Drainage by the Lyon method occasionally produces

## INTERNATIONAL ABSTRACT OF SURGERY

and the bladder catheterized. As local examination is seldom sufficient to determine the extent of the lesion a suprapubic exploratory incision should be made if the general condition suggests that the injury is serious.

Some surgeons regard colostomy as essential in all cases whereas others perform it only in cases of extensive injuries. The authors state that in cases of simple lacerations of the mucosa ordinary surgical cleansing and drainage are sufficient.

In cases with lesions of the rectal wall and adjacent structures the integrity of the peritoneum should be established by laparotomy and a colostomy performed. Drains should be placed in the anus and through lateral perirectal incisions. Bladder in catheter or by cystostomy depending upon their extent.

When the peritoneal cavity is involved the usual procedures for hemostasis suturing of perforations and surgical cleansing should be carried out. In most cases a colostomy is essential. In accordance with the present tendency in France the authors rely upon gauze drainage particularly in the form of the Mikulicz drain.

The colostomy should be closed after supplementary operations have been performed on the sphincters and urinary tract and the integrity of these parts has been re-established.

The authors cite the case of a laborer who fell from a ladder onto the handle of a shovel. As his clothing was not torn the injury was considered slight and he was placed under observation. The anus was found dilated and a small amount of blood came from the rectum. Within four hours the presence of serious internal injuries was manifested by a rapid rise in the pulse rate and rigidity over the lower part of the abdomen. At operation the pelvis was found filled with blood and feces and an extensive tear of the rectum into the cul de sac was discovered. The rectum was repaired, a Mikulicz drain introduced and the operation terminated by colostomy. Uneventful recovery resulted.

ALBERT F. DE GAIST, M.D.

Wood W. O. and Wilkie D. P. D. Carcinoma of the Rectum. An Anatomopathologic Case Study. Ed 5. 1933. 13.

The study herewith reported was made on 40 specimens of carcinoma of the rectum removed at operation and hardened in formalin. All of the lymph glands were dissected out and subjected to microscopic examination. The position of the lymph glands and the site and extent of the primary tumor were recorded on a chart. A study was then made of from one half of the specimen including the entire in its longitudinal axis together with a port on the rectal wall above and below.

In the early stages cancer of the rectum forms a plaque in the mucous membrane of the bowel wall. Its later appearance depends upon its

degree of malignancy and especially its power to invade the neighboring tissues. Great variations are observed. The least malignant cancers show a tendency to grow toward the lumen of the bowel. The tumor remaining flattened with only slight elevations of the margins shows marked invasive tendencies and a high degree of malignancy. Many intermediate forms are found. The most malignant variety of rectal cancer is the primary mucoid or colloid cancer. This is commonly a large, bulky tumor. Ulceration of the growth takes place as the result of infection and insufficiency of the blood supply causing central necrosis of the tumor. Before the occurrence of ulceration there are often no symptoms.

Tumors spread more readily laterally than in the longitudinal direction. They may ultimately encircle the bowel completely. This is apt to occur especially in the region of the pelvic rectal junction. Miles estimates that it takes about one year for the cancer to grow three fourths of the distance around the circumference of the bowel. Small neighboring growths of the tumor about the size of a split pea are frequently observed. These show the structure of simple adenomata. They occurred in 30 percent of the specimens examined. Lockhart Macnerv and Dukes regard the adenomata as precancerous lesions.

Carcinoma of the rectum may spread in 4 ways: (1) locally, by direct extension; (2) by the blood stream; (3) by the lymphatics; and (4) by peritoneal deposits. Blood stream dissemination may be regarded as an accident in the life history of bowel cancer. It results from the invasion of a vein and the dissemination of tumor emboli to the liver through the portal circulation. Recurrences after operation frequently involve the liver. Local spread of the growth is usually a matter of gradual extension but continuity from the primary site. It occurs more readily in the circular than in the longitudinal direction. At first limited to the mucosa and the submucosa later it invades the muscularis sending rootlike processes between the muscular fibers. Eventually it perforates the muscular coat and may invade neighboring organs such as the prostate and bladder and press upon the sacral nerves. In exceptional cases the growth is very malignant and rapidly permeates adjacent tissues and organs in all directions. Lymphatic permeation through the submucosa and lymphatics was found in 3 of the specimens studied. It appears to be an unusual and limited dissemination of the cancer nodules. When the tumor has invaded the muscular coat and has led to perforation into the peritoneal fat it may still be completely removed with a satisfactory after result.

In the study reported 123 lymph glands were sectioned and examined microscopically. Forty nine of the 100 specimens were entirely free from lymph gland invasion. Of the remaining 51 only 1 gland was infected in 14 and only 2 glands in 13. Twenty four specimens presented severe glandular

involvement According to the authors experience the larger glands are usually inflammatory and the hyperplasia results from the absorption of septic material from an ulcerated growth The presence of large palpable glands in cancer of the rectum may be misleading as the enlargement is often entirely of an inflammatory nature This cannot be determined by palpation The location of the lymph glands has a most important bearing on the scope of a radical operation In most cases enlarged glands are found at or above the level of the growth In the very malignant cases the majority of the lymph nodes are infected An essential part of the radical operation is removal of the glands as high up as the level of the bifurcation of the superior hemorrhoidal artery The sheath of the rectum plays a part in limiting the spread of the process Numerous sections made of the levator ani and external sphincter muscles in the cases reviewed failed to reveal cancer foci Apparently voluntary muscle resists the invasion of cancer Spread of cancer of the rectum by lymphatic permeation appears to be a very limited process until the advanced stages of the disease

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JOHN W. NUTZ, M.D.

#### LIVER GALL BLADDER PANCREAS AND SPLEEN

Lambert O. The Surgical Treatment of Gall Bladder Stasis (Traitement chirurgical de la stase vésiculaire) *Presse Méd. Par.* 933 11 109

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ALBERT F. DE GAOSY, M.D.

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The study herewith reported was made on 100 specimens of carcinoma of the rectum removed at operation and hardened in formalin. All of the lymph glands were dissected out and subjected to microscopic examination. The position of the lymph glands and the site and extent of the primary tumor were recorded on a chart. A study was then made of from one half of the specimen including the entire tumor in its longitudinal axis together with a portion of the rectal wall above and below.

In the early stages cancer of the rectum forms a flattened plaque in the mucous membrane of the bowel wall. Its later appearance depends upon its

degree of malignancy and especially its power to invade the neighboring tissues. Great variations are observed. The least malignant cancers show a tendency to grow to ward the lumen of the bowel. The tumor remaining flattened with only slight elevations of the margins shows marked invasive tendencies and a high degree of malignancy. Many intermediate forms are found. The most malignant variety of rectal cancer is the primary mucoid or colloid cancer. This is commonly a large bulky tumor. Ulceration of the growth takes place as the result of infection and insufficiency of the blood supply causing central necrosis of the tumor. Before the occurrence of ulceration there are often no symptoms.

Tumors spread more readily laterally than in the longitudinal direction. They may ultimately encircle the bowel completely. This is apt to occur especially in the region of the pelvic rectal junction. Miles estimates that it takes about one year for the cancer to grow three fourths of the distance around the circumference of the bowel. Small neighboring sessile growths of the tumor about the size of a plum are frequently observed. These show the structure of simple adenomata. They occurred in 30 per cent of the specimens examined. Lockhart-Mumery and Dukes regard the adenomata as precancerous lesions.

Carcinoma of the rectum may spread in 4 ways: (1) locally by direct extension (2) by the blood stream (3) by the lymphatics and (4) by peritoneal deposits. Blood stream dissemination may be regarded as an accident in the life history of bowel cancer. It results from the invasion of a vein and the dissemination of tumor emboli to the liver through the portal circulation. Recurrences after operation frequently involve the liver. Local spread of the growth is usually a matter of gradual extension but continuity from the primary site. It occurs more readily in the circular than in the longitudinal direction. At first limited to the mucosa and the submucosa later it invades the muscularis sending root-like processes between the muscular fibers. Eventually it perforates the muscular coat and may invade neighboring organs such as the prostate and bladder and press upon the sacral nerves. In exceptional cases the growth is very malignant and rapidly permeates adjacent tissues and organs in all directions. These cases are hopeless from the beginning. Lymphatic permeation through the submucosa and lymphatics was found in 3 of the specimens studied. It appears to be an unusual and houted dissemination of the cancer nodules. When the tumor has invaded the muscular coat and has led to perforation into the perirectal fat it may still be completely removed with a satisfactory result.

In the study reported 123 lymph glands were sectioned and examined microscopically. Forty-nine of the 100 specimens were entirely free from lymph gland invasion. Of the remaining 51 only 1 gland was infected in 14 and only 2 glands in 13. Twenty-four specimens presented severe glandular

involvement According to the authors experience the larger glands are usually inflammatory and the hyperplasia results from the absorption of septic material from an ulcerated growth The presence of large palpable glands in cancer of the rectum may be misleading as the enlargement is often entirely of an inflammatory nature This cannot be determined by palpation The location of the lymph gland has a most important bearing on the scope of a radical operation In most cases enlarged glands are found at or above the level of the growth In the very malignant cases the majority of the lymph nodes are infected An essential part of the radical operation is removal of the glands as high up as the level of the bifurcation of the superior hemorrhoidal artery The sheath of the rectum plays a part in limiting the spread of the process Numerous sections made of the levator ani and external sphincter muscles in the cases reviewed failed to reveal cancer foci Apparently voluntary muscle resists the invasion of cancer Spread of cancer of the rectum by lymphatic permeation appears to be a very limited process until the advanced stages of the disease

In recent years attempts have been made to differentiate between the various grades of malignancy It is well known that the rapidity of growth and cell dissemination varies greatly and that breast cancer may run a rapid course of a few months or may be present for many years with very slight symptoms of activity or spread In cancer of the rectum the age of the patient is a factor but the structure of the tumor and its ability to liberate malignant cells are of great importance in the virulence of the disease Dukes has attempted to group cases of cancer of the rectum according to the depth of penetration of the wall of the rectum and the presence or absence of secondary growths in the lymph glands From a study of cases so grouped it is apparent that the presence or absence of infection of the lymph glands is of more importance in the prognosis than the extent of the local spread Many of the cases reviewed are too recent to be of aid in the estimation of the merits of this method of grouping

Broders grades carcinoma of the rectum according to the histological appearance of the tumors Ralston has recently called attention to the importance of distinguishing between the true primary mucoid cancer and the adenocarcinoma with mucoid degeneration The mucoid carcinoma is a malignant hyperplasia of mucus forming elements In this tumor the cells are large and round and distended with lightly staining cytoplasm The signet ring appearance is common because of the accumulation of mucus in the cells and ultimately rupture of the distended cells takes place There is no evidence of glandular formation In the adenocarcinoma with mucoid degeneration the typical picture is that of an adenocarcinoma The acini become distended with mucus and ultimately rupture The lining epithelium is compressed and partly destroyed The presence of mucus in the acini in any quantity indicates that the cells are well differentiated and are attempt-

ing to perform their normal function Tumors of mucoid degeneration are therefore of a low grade of malignancy while true mucoid cancer is very highly malignant being in fact a degenerating medullary carcinoma

The authors conclude that the grading of rectal cancers has not yet reached a stage at which it will permit a much more accurate prognosis than that which has been possible in the past The histological structure may vary considerably in different parts of the growth and the tumor can be graded only accurately by complete examination and by noting the type of structure which preponderates Conclusions based on examination of only small pieces of tumor are certain to lead to error

In conclusion the authors review briefly cases typical of the various grades of malignancy and extent of spread showing in each instance the local spread by a large section the lymph spread by a gland chart and the grade of malignancy by a photomicrograph

JOHN W. NUTZ, M.D.

#### LIVER GALL BLADDER PANCREAS AND SPLEEN

Lambert O. The Surgical Treatment of Gall Bladder Stasis (Traitem. chir. gic. de la stase vésiculaire) *Pro se méd. Par* 1933 XII 1097

The diseases peculiar to the infraphepatic region may be classified into 2 groups (1) ulcer cancer cholelithiasis and the inflammatory results of cholelithiasis and (2) certain more or less functional disturbances which are differently interpreted by various authorities It is with the second group particularly gall bladder stasis that this article deals

In spite of the important studies of Lyon and Chiray there has been no unanimity of opinion regarding the diagnosis the nature or the treatment of gall bladder stasis In Lambert's opinion the essential feature of gall bladder stasis is visceroposis This may or may not be complicated by perivesicular adhesions When perivesicular adhesions are present the stasis is atonic and when they are absent it is mechanical and atonic

In atonic stasis the gall bladder is elongated and mobile and extends beyond the edge of the liver It can be emptied readily by compression but remains flaccid In addition to the cholecystatony described by Chiray there is ptosis In 6 per cent of the cases talc is found Cholecystitis is exceptional Beside the gall bladder findings there is the general picture of visceroposis and the atony extends to the stomach and duodenum

When the stasis is due to a mechanical cause such as perivesicular adhesions ptosis may be absent However it is present in 8 out of 10 cases Because of the associated disorders in the infraphepatic region the rôle of the gall bladder in the production of symptoms is difficult to determine exactly Pain over the gall bladder asthenia headaches vomiting and icterus are symptoms of some significance Drainage by the Lyon method occasionally produces



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an abundant amount of B bile and is followed by relief for a time. The most valuable diagnostic method is cholecystography. This shows a persistent gall bladder shadow and discloses the shape and location of the gall bladder.

The functional effects of stasis are easily understood. The bile becomes abnormally concentrated and viscous making evacuation of the gall bladder difficult or impossible. The result is discomfort or pain in the right hypochondrium. The discomfort or comes more complicated when there are adhesions between the gall bladder and duodenum.

While treatment by the method of Lyon often gives good results lasting for a period of two or three months some patients are unable to tolerate it and few are benefited by it for a considerable length of time.

Surgical methods of treatment include cholecystectomy, external drainage and internal drainage.

Cholecystectomy does not give relief and often makes the condition worse.

External drainage is of value when cholecystitis or pancreatitis is present. In cases of stasis alone the patient is relieved only as long as the fistula persists.

Internal drainage by anastomosis of the gall bladder to the stomach or duodenum is not a physiological operation. While the results are sometimes excellent they are also sometimes very poor.

As ptosis particularly of the stomach is an essential feature in these cases the author believes that operation should be directed primarily to the ptosis and procedures on the gall bladder should be accessory.

At operation the gall bladder may be found normal atonic or obstructed. When it is normal the operation should be limited to plication and suspension of the stomach. When ptosis and atony of the gall bladder are found plication and suspension of this organ should be added. The fundus should be reduced by invagination beneath a pursestring suture.

If the ptosis is due to anomalies of position with links of the cystic duct within the lesser omentum the duct should be isolated in order to destroy adhesions and in order that it may be straightened resulting defect in the peritoneum may be repaired with a peritoneal or prepared graft of amniotic membrane. Adhesions to the duodenum may be repaired. They must be destroyed and their recurrence prevented. The raw surface of the gall bladder should be covered with a prepared graft and that of the duodenum is invaginated by a transverse suture. This suture displaces the duodenum to the left and out of contact with the gall bladder.

In some instances duodenal stasis necessitates duodenopunction in addition.

The operations described are well tolerated. The author obtained satisfactory results from them in a series of 120 cases. In the oldest cases the result have been maintained six years.

ALBERT F. DE GROOT, M.D.

Shann H. and Fradlin W. Z. Liver Sequestration After Cholecystectomy. Report of a Case with a Review of Experimental and Clinical Observations. *J. Am. Med. Ass.* 1933, 18, 9.

Two months after cholecystectomy a woman of forty eight years was operated upon for persistent biliary colic. A probe passed into the fistula tract led to a collection of bile and purulent exudate under the liver. After separation of adhesions exposure of the undersurface of the liver a large mass of grayish white necrotic tissue suggesting a splenic infarct was found to the right of the gall bladder fossa. Withdrawal of the mass which was accomplished easily by blunt traction exposed a deep cavity in the liver which was lined with rough granulation tissue. Pathological examination showed the mass to be composed mainly of necrotic liver tissue. The patient made a good recovery.

The authors state that when the numerous operations performed on the gall bladder and adjacent organs are considered it is remarkable that there are so few reports of injury to the hepatic vessels followed by liver necrosis. Anomalies of the hepatic artery or its branches or a tortuous course of the vessels in relation to the bile ducts would make clamping or ligation easily possible in difficult operations as shown in the case reported. Accidental ligation of the hepatic artery or one of its large branches may cause anemic infarction with sequestration of liver tissue.

WILLIAM E. SHACKLETON, M.D.

Elman R. Acute Interstitial Pancreatitis. A Clinical Study of Thirty Seven Cases Shown as Edema Swelling and Induration of the Pancreas But Without Necrosis or Hemorrhage or Suppuration. *S. & G.* 6-061, 1933, 1, 9.

The author reports four cases of his own and reviews thirty three collected cases of a disease entity which he diagnoses as acute interstitial pancreatitis. This condition is characterized by induration, swelling and edema of the pancreas. Hämorrhage, suppuration and necrosis are absent.

As a rule there is a history of previous attacks of pancreatitis ranging from a few weeks to a number of years. Many patients have complete relief of symptoms between attacks while others complain of chronic dyspepsia simulating gall bladder disease. Pain is the predominant symptom. In some cases it is so severe as to cause prostration. In nearly half of the cases with severe pain operation is performed within twenty four hours after the onset. In the majority a diagnosis of biliary colic perforation of a peptic ulcer or intestinal obstruction was made before the operation. In only sixteen of thirty five instances was the gall bladder found diseased. In no case was perforation or obstruction discovered. Local tenderness was present in the mid epigastric region and occasionally also in the left or right upper quadrant of the abdomen. Cholelithiasis occurred in six cases and a marked increase of the amylase of the blood in one case. Lipase and diastase were

found in the urine in two cases. In all of the cases the pancreas was examined at operation or autopsy. It was found definitely edematous and sometimes hard and indurated but showed no hemorrhage or necrosis. In a number of cases the edema appeared yellow or green suggesting the presence of bile but microscopic studies of the tissue failed to reveal necrosis. The striking finding was a marked infiltration of polymorphonuclear cells into the interstitial tissue of the pancreas.

The author attributes the condition to a reflux of bile from the common duct into the pancreatic ducts.

The most effective surgical procedures included besides drainage of the pancreas by incision treatment of the biliary tract such as bile drainage with or without removal of the gall bladder or cholecystectomy alone. S. A. LEVINE, M.D.

#### Levin, S. L. Primary Carcinoma of the Pancreas *Ann. Surg.* 93:3 1931

The author reviews ninety-nine cases of primary carcinoma of the pancreas. He describes three gross and microscopic types of such tumors: (1) cylindrical cell carcinoma derived from the epithelium of the duct system; (2) a type derived from the parenchyma of the gland; and (3) a type arising from the islands of Langerhans.

Very little is known regarding the cause of pancreatic carcinoma but chronic pancreatitis, gall stones, syphilis, alcohol, trauma, and developmental anomalies have been suggested as etiological factors.

Carcinoma of the pancreas is more frequent in men than in women in the ratio of 3:2 or 4:1. It may occur at any age but is most common between the fifth and seventh decades of life.

It develops most often in the head of the pancreas. Metastasis first appears in the regional lymph nodes and the liver. Of the ninety-nine cases reviewed, the liver was involved by metastases in fifty-nine and the regional lymph nodes in thirty-five. The

more common results from local extension lead to obstruction of the duct of Wirsung with the development of chronic interlobular fibrosis of the pancreas, obstruction of the common bile duct, jaundice, and dilatation of the gall bladder. In some cases partial obstruction of the duodenum or pylorus may occur. Occasionally pressure on the portal vein produces edema and ascites.

The most constant symptoms in the hospital cases studied were cachexia, loss of weight, anorexia, and weakness. The next most frequent symptom was jaundice. In some cases the jaundice was accompanied by pain. Three types of pain were distinguished: (1) a steady, severe, dull mid-epigastric pain radiating to the lower back; (2) a colicky pain in the right hypochondrium radiating to the right scapular region and resembling gall stone colic; and (3) a paroxysmal pain beginning near the umbilicus and resembling that of tabetic crises. Nausea and vomiting occurred in fifty-six of the hospital cases.

The most significant findings of physical examination were emaciation, jaundice, distention of the gall bladder, and enlargement of the liver. The gall bladder was palpable in fourteen of the twenty cases presenting jaundice. The liver was enlarged in 81 per cent of the series. A tumor mass other than the liver and gall bladder was found in seven cases. In two-thirds of the cases tenderness was noted in the epigastrium or over the liver or gall bladder. In the majority of cases x-ray examination was of little diagnostic aid.

Three types of operations were carried out: (1) simple exploration; (2) cholecystectomy and choledochostomy; and (3) choledochoduodenostomy. The maximum survival after operation occurred in cases in which a cholecystenterostomy was performed. In the eight cases in which this operation was done the average survival period was fourteen and one-half months. Irradiation treatment is of doubtful value. ROBERT Z. LEE, M.D.

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quently initiated by amenorrhea. The regressive and progressive processes which occur later are designated by the author as the second stage. These are followed by the third or postoperative stage. These appear that the rest of the pathological phenomena are able to develop only when the ovaries have been rendered quiescent. These phenomena occur with a definite sequence. In cases of suprarenal tumor (puberty) is reached early and characterized by heterosexual phenomena. Theoretically it is possible that premature puberty is induced also in cases of arrhenoblastoma. The re-feminization after operation usually appears punctually with the appearance of the menses. In five cases pregnancy occurred subsequently. The hormonal effects of the tumors refute Halban's theory of the necessity of the development of an arrhenoblastoma as well as for intersexualism is a chromosomally engendered deviation of the body structure from the normal. The author seeks this deviation not in the general constitution of the patient as is done by Halban but in the tissue anlage in which the tumor develops.

ROBERT MEYER (G)

## MISCELLANEOUS

Binet A. A Clinical and Semiologic Study of Gynecological Pain. (Étude clinique et semiologique de l'algie gynécologique). R. f. c. d. 1933 xxvii 45

The author first reviews the general etiology of pain and describes the two classical types of pain recognized by psychologists: (1) a sensation resulting from a functional or organic lesion of the visceral or peripheral and (2) central or psychic pain. The production of the first type requires an excitant receptor organs and centers of interpretation. Binet discusses each of these components in some detail. He classifies the excitants, traces the receptors and conductors to the centers of interpretation and gives the accepted neurological explanation of the latter. The discussion of the central or psychic pains involves a consideration of mythomaniacs, hypersensitive persons, paranoiacs and other abnormal types of individuals.

The pains associated with gynecological conditions are divided into the psychic and the physical. Psychic pain is manifested by a paralysis of thought and action and physical pain by local sensitivity motor reactions such as reflex contractures of the flexor and particular attitudes, respiratory changes, secretory changes and sympathetic nervous system changes such as those causing dilatation of the pupils.

Gynecological pains are analyzed with regard to their intensity, periodicity, provocation, relief, localization and action.

In conclusion the author says that careful consideration of the manifestations, intensities and localization of pain is of great aid in the determination of the cause.

GEORGE C. FOLIO, M.D.

Pierra L. M. The Treatment of Pain in Gynecological Conditions. (Thérapeutique des algies gynécologiques). R. f. c. d. 1933 xxviii 564

In a preliminary discussion of the etiology of the two types of pains, the functional and the organic, the functional pains are due to a physiological disturbance in the sex organs and are therefore periodic. Examples of such pain are dysmenorrhea, intermenstrual crises and dyspareunia. The organic pains are due to inflammatory, congestive or neoplastic processes and may be intermittent or persistent. Pierra discusses also localized neuralgias such as pruritus vulvae, coccydynia and neuralgia of the pudendal nerve.

Treatment has two objectives: (1) relief of the paroxysms which is easily accomplished by the use of sedatives and (2) the prevention of recurrence of sedatives are divided into the chemical and the physical and the former into those acting on the central nervous system and those acting on the peripheral nervous system. Sedatives acting on the central nervous system are of three types: (1) true analgesics such as morphine, (2) antithermic analgesics such as antipyrine and (3) analgesics with a mixed action such as acetone. Sedatives acting on the peripheral nervous system are antispasmodics which have a selective action on the uterus. They include excitants of the sympathetic such as atropine, bethanidine and ephedrine and paralyzers of the sympathetic such as ergot and johannina.

Physical sedatives include bed rest, topical applications and irritants, baths, douches, irrigations and mineral water therapy.

Several prescriptions based on the usual hypnotics and antispasmodics (antipyrine, belladonna, cannabis indica) are included in the article.

In conclusion the author discusses the injecton method of treatment with various solutions such as Seard's solution, salicylic acid and a solution of benzyl benzoate. He states that some gynecologists have obtained very satisfactory results from this type of therapy.

GEORGE C. FOLIO, M.D.

Cotte G. The Surgical Treatment of Pain in Gynecology. (Traitement chirurgical de l'algie gynécologique). R. f. c. d. 1933 xxviii 61

Practically all lesions of the female genital tract may be accompanied by pain at some time during the course of the evolution. In cases with intracavitary neuralgia it often becomes necessary to interfere upon the responsible nerves.

The female genitalia are supplied by the following three groups of nerves: (1) the pelvic sympathetic (superior hypogastric plexus of No. 10 sacral paravertebral nerve of Lata jet), (2) the utero-ovarian nerves and (3) the internal pudendal nerve. The first two groups supply the internal genitalia and vagina and the internal pudendal nerve supplies the external genitalia and perineum.

The technique of the various operations on these nerves and the commonly used surgical approaches are to be criticized.

Periaarterial sympathectomy consists in stripping the fibers from the common iliac and hypogastric arteries. Operation on the presacral nerve consists in resecting from 2 to 12 cm of the nerve. This nerve is readily accessible over the promontory of the sacrum. The author performs these operations under spinal anesthesia.

In discussing interventions on the utero ovarian plexus (internal spermatic plexus) the author says that the fibers of the plexus to the ovary are very small and it surrounds the venous plexus so intimately that resection is very difficult. Dwyer and others have therefore substituted the injection of isopropyl alcohol for resection.

Cervine nerves are best approached through the lateral ligaments as is done in Germany.

Nervotomy of the pudendal nerves may be done easily under local anesthesia through an approach one fingerbreadth from and parallel with the ischiatic ramus.

Chrysolomy requires an incision along the third and fourth dorsal vertebral laminectomy and the triangular resection of a specific portion of the cord.

Laminectomy with inoperable carcinoma is treated by chrysolomy or resection of the presacral nerve. Chrysolomy, however, often results in only incomplete analgesia and is followed by trophic disturbances and disturbances of the bladder and anal sphincters.

In fifteen cases of inoperable carcinoma with pelvic neuralgia in 1911 Janu resected both the presacral nerve and the periaarterial hypogastric sympathetics; there were two deaths. Of six cases of inoperable carcinoma in which this operation was performed by Cotte gratifying results were obtained in five.

Cotte states that in principle interventions on the pelvic sympathetics are justified only when the pain is due to a primary or secondary hypogastric plexitis from a lesion of the parametria or neighboring cellular tissue carcinoma. It is thus that if the carcinoma is not resectable in vivo or if the sacral roots resected of the presacral nerve with periaarterial sympathetics are analgetically effective. In the presence of a thoracic or a sacral neuralgia or even paraplegia the resection of the sympathetic nerves is not indicated.

If fibroid or cyst is present such resection is of course unnecessary.

The surgical treatment of utero ovarian plexalgias is much more difficult and unsatisfactory.

Neuralgia of the internal pudendal nerve associated with vaginitis or kraurosis vulvae responds well to nerve resection. (GROFF C. FINKEL M.D.)

Poltz G. The Continuity of the Germ Plasm in Man (Die Keimbahn des Menschen). Zik f Anat 1933 c 33.

Since Nussbaum claimed that in batrachians and teleostians the sex cells develop independently of the body cells—a theory upon which Weissmann's theory of the continuity of the germ plasma rests—contradictory views on the independence of the sex cells in mammals and especially in man have been expressed. Recently Dwyer opposed the theory in spite of the confirmatory findings made by Fischel, Poltzer and Sternberg on well fixed and stained human embryos.

Poltzer discusses the problem on the basis of seventeen human embryos ranging in size from 0.3 to 8.5 mm which permitted definite conclusions to be drawn regarding the germ plasma.

The protoblasts or primordial sex cells are globular or long ellipsoid and show round nuclei with frequently a short pointed projection toward the sphere. The nuclei have a very fine reticular structure and one or two nucleoli. The cells are easily differentiated from blood cells by light staining with eosin. In a spherical structure within the cytoplasm lie several small granules, presumably centrioles which stain darkly with hematoxylin. These form a vertical connecting plane between the middle of the nucleus and the sphere of the centriole plate. The sphere is always present. In the mitosis of the primordial sex cells the pro phases are longer than in the cells of the epithelium of the bowel and vitelline sac. They lie deep in the epithelium and at times show definite remains of the sphere.

Later phases cannot be differentiated from those of other cells. In general there are only few mitoses in the primordial sex cells and not more than three in the embryo as division takes place rapidly (in about forty minutes) and the increase of the primordial cells from 40 cells in the 0.6 mm embryo to 600 cells in the 4 mm embryo takes about ten days. It is therefore not surprising that no kary kinetic figures are seen.

The migration of the primordial sex cells is proved statistically as well as morphologically. In embryos of 0.6 mm and 0.8 mm the primordial sex cells were found in the entodermal epithelium of the vitelline sac near the diverticulum antentericum. Here the cells heaped up and congregated apparently from 10 or 15 germ cells. In a 3 mm embryo only 15 primordial sex cells were found. In embryos of 0.5 to 1 mm all primordial sex cells were in the fold of the 3 mm embryo and 10 of them were in the bowel epithelium and a few in the vitelline sac. In embryos of 1 to 2 mm the sex cells were in the fold of the

from 4 to 4.5 mm more primordial sex cells were found in the mesoderm than in the entoderm particularly in the cranial as compared with the caudal region. Gradually the number of primordial sex cells in the entoderm decreases with the age of the embryo whereas the number in the root of the mesentery and especially in the median part of the urogenital fold constantly increases. Therefore these cells migrate.

As the caudal portion of the vitelline sac forms the rectum and the cloaca the primordial sex cells come from the wall of the vitelline sac into this region when the embryo reaches the size of about 4 mm. As the result of the progressive division of the cloaca primordial sex cells from its wall reach the caudal extremity of the umbilical loop when the embryo measures between 6 and 8.5 mm.

Morphological proof of the migration is found by Politzer in the sending out of projections of the primordial sex cell in the entoderm into the connective tissue combined with ring like constriction by the basal membrane of the epithelium. This occurs most frequently at a time when the number of the cells makes their migration probable. While the lo-

cation of the sphere in the primordial cells in the entoderm on the one hand and in the gonads on the other has apparently not been determined definitely nevertheless in the cells migrating from the entoderm to the gonads the sphere is always toward the side of the nucleus pointing to the gonads. During the migration the cells do not divide. Mitotic division and other activities are not simultaneous functions.

In male and female embryos between 15 and 17 mm the primordial sex cells are always present in the gonads. In this regard the author rejects the findings of Neumann and Stieve whose material and conclusions he regards as faulty and bases his arguments chiefly upon the experimental findings of Dantschakoff who has definitely proved the continuity of germ plasma in birds and has shown that no primordial sex cells develop from the colonic epithelium.

In conclusion he states that as the primordial sex cells are the primary cells of the perimogoneogenic cells in the human being the continuity of germ plasma in man is also established.

ROBERT MEYER (C)

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

**Manger J** Investigations on the Problem of Sex Diagnosis from the Urine of Pregnant Women (Unter suchung n zum Fr h m der G scht cht l gn e aus s h n enharn) *Deutsche med Wchsch* 1933 1 855

An old Egyptian papyrus at the Berlin Museum reports that in order to determine whether a woman would bear children the ancient Egyptian placed spelt and barley in a container with earth and watered it daily with the woman's urine. If the barley grains sprouted pregnancy was believed to exist. It was believed also that the sex of the child could be determined in this way.

The author investigated the effect of the urine of pregnant women on the germination of wheat and barley grains because during pregnancy the urine contains hormones which may have a favorable effect upon the growth of grains. He found that more rapid growth of the barley as compared with the wheat signified a female child while non accelerated or delayed growth of the barley signified a male child. In studies of the urine of 100 pregnant women 80 correct diagnoses were made. **DECKER ISWILER (G)**

**Fleissl I** The Effect of Pregnancy on the Development and Growth of Benign Tumors (U b r d Einfluss d Schw ersch (t auf d Auft ten und Wach t m gut t g r ch uel t) *Wchnsch* 1933 1 645

Not infrequently in cases of neurofibromatosis pregnancy causes the first manifestation of latent skin symptoms or a considerable enlargement or increase in number of already existing tumors and pigmentations. Delivery is followed by extensive retrogression and occasionally complete disappearance of the skin symptoms of the disease.

Cases from the Second University Gynecological Clinic at Vienna are reported in detail. The patient a primipara twenty years of age showed no pigmented spots or tumors previous to her pregnancy. In the beginning of the fourth month small lobulated tumors appeared in the left hypogastric region. Later numerous other tumors developed in the skin of the abdomen the back and the arm. Simultaneously numerous pigmented spots developed on the chest and back. The swelling in the skin appeared clinically to be neurofibromata and were proved to be neurofibromata on histological examination. This was therefore a definite case of neurofibromatosis (Recklinghausen's disease). Control examinations four weeks and four months after delivery showed complete retrogression of the small tumors and disappearance of the pigmented spots. The large cock comb tumors in the left hypogastric

region and on the back had become considerably smaller but were still definitely demonstrable.

The effect of pregnancy upon neurofibromatosis is to be traced to endocrine causes. The term neurofibromatosis of pregnancy is preferable to the heretofore common term fibroma molluscum of pregnancy.

Symmetrical lipomata may also be activated by pregnancy. The author reports a case of his own that of a primipara thirty years of age who had a symmetrical lipomata on both forearms. Five months after delivery the fatty tumors had completely disappeared.

Angiomata and lymphangiomata frequently become larger during pregnancy and regress to their former size after delivery. **HASHEM (G)**

## LABOR AND ITS COMPLICATIONS

**Perl J** The Diagnosis of Rupture of the Uterus and the Treatment of Cases of This Injury (U b r d Diagnose der Uterus ruptur und das therapeutische Vorgehen bei Ruptur der Gebärmutter) *Gebstf* 1933 11 75

Lacerations of the uterus are becoming less frequent from year to year because of progress in the general medical care of obstetrical patients, the increase in the number of obstetrical institutions and the improvement in operative technique. The clinical symptoms of impending rupture of the uterus are well known. Among the causes of uterine rupture are (1) a flat and narrow pelvis (2) disproportion between the fetal head and the maternal pelvis (3) operative scars (4) intra uterine manipulations (5) malpositions (6) multiparity (7) external force (8) underdevelopment of the genitalia (9) abnormal insertion of the placenta (10) protracted labor (11) obesity and (12) irrational administration of hypophysical preparation.

Uterine rupture is usually recognized following a sudden sharp pain, the labor pains cease and bleeding occurs from the genitalia. The entrance of the body of the child and of blood into the free peritoneal cavity causes severe abdominal pain, vomiting, cold sweat and a small rapid pulse. The respiration is accelerated and the heart tones of the child cease. According to Hoebe and Litzorn the failure of occurrence of labor pains following the intravenous injection of from 10 to 20 ccm of pituitrin indicate rupture. The signs of shock and internal bleeding may be absent. This is often the case when the rupture occurs in the upper part of the uterus.

Rupture of the uterus is frequently complicated by rupture of the bladder. This complication is manifested by blood urine. The rupture of the

uterus may be complete or incomplete. In cases of complete rupture elastic tumors are frequently found beside the uterus. These are subperitoneal hamatomata which often cause pain in the lower extremities through pressure on the nerve stems (Tholer Graff). Most complete ruptures occur in the scar of a caesarean section. Rupture of the corpus is usually complete and occurs frequently during pregnancy. Rupture in the lower segment is usually the result of obstetrical procedures. Longitudinal lacerations are the most frequent and have the best prognosis. Circular ruptures are less common and transverse lacerations least common.

Following rupture of the uterus the labor should be terminated as rapidly as possible. When the head is engaged this is done preferably by perforation. The majority of obstetricians favor removal of the uterus as they believe that every case of uterine rupture is infected. However in cases of very recent lacerations involving less than one third of the circumference of the organ the uterus may be sutured. When the rupture is in the upper segment of the uterus an abdominal incision should be made but when it is in the lower segment a suprapubic incision is indicated. The vaginal procedure recommended by Neugebauer is extremely difficult because of the profuse bleeding. Conservative treatment consists in removal of the uterine contents followed by tamponade of the uterus and vagina and pressure over the abdomen. In cases of complete laceration Stoerkel removes the uterine contents from below and resorts to operation only when hemorrhage occurs. The mortality in the different clinics varies between 10 and 50 per cent.

In the author's material from 1913 to 1932 there were twelve ruptures all of which occurred in multiparae. Seven (58 per cent) of the patients died.

B. LOK LSKL (G)

## MISCELLANEOUS

Spitzer W The Frequency and Obstetrical Significance of Rupture of Genital Varices (Ueber die Häufigkeit und geburtshilfliche Bedeutung der Ruptur der Genitalarven) Zeitschrift für Geburtshilfe 1911 p 401

Varices of the female genitalia may be external or internal. Internal varices may lead to severe intra-abdominal bleeding necessitating immediate laparotomy. External varices are classified by Naupols into a low group occurring on the vulva and vagina and an external part of the perio vaginal, and a high group occurring in the cervix, the lower segment of the uterus and the uterine wall.

Among 3 272 births Spitzer observed 19 cases of rupture of external varices. During pregnancy the diagnosis of hemorrhage due to varices may be difficult as the bleeding may be confused with that due to placenta previa or premature separation of the placenta. In all cases in which bleeding from varices is suspected a speculum examination is advisable. In the differential diagnosis atonic uterine bleeding

must be ruled out. Frequent palpation of the uterus will be sufficient to rule out bleeding from a uterine tear. However, particularly in asthenic individuals both types of bleeding may occur. The occurrence of hemorrhage from varices late in the puerperium is rare.

The causes of genital varices include besides disturbances of endocrine activity of the hypophysis (diminution of the vasotonic action of the hypophysis) a marked shifting of the blood from the splanchic vessels to the peripheral vessels and the asthenic psych type of constitution associated with mechanical factors.

In the intravaginal treatment good exposure of the involved area must be obtained for suture ligation in front of and behind the rupture. Hemorrhage from the suture points may be controlled by gauze packs. Of the external auxiliary procedures manual compression of the genitalia according to the Fritsch method is best. Sawyer (C)

SAMPLER (G)

Scharfe W. A Contribution on the Physiology and Pathology of the Gall Bladder in Pregnancy. Labor and the Puerperium with Special Consideration of Stone Formation During These Periods. (Zur Physiologie und Pathologie der Gallenblase während der Schwangerschaft Geburt und Wochebett unter besonderer Rücksichtnahme der Steinerkrankung in dieser Periode). Fortschr. 1881. 633. 12 u. 43.

As is well known women who suffer from gall stones frequently refer their first attacks to a pregnancy or a time shortly after a pregnancy. This fact is generally explained by the assumption that the gall bladder is compressed by the gravid uterus so that stagnation occurs within it. However while many surgeons—among them Lichtwitz—believe that pregnancy has an influence on the formation of gall stones others—among them Aschoff—reject this theory. Schaefer therefore undertook a study of the entire problem of stone formation during pregnancy.

In this article he first reviews the nerve supply of the gall bladder and extrahepatic biliary passages and the physiology of the gall bladder. He then discusses the function of the gall bladder and the biliary passages. He states that even up to a few years ago an active function of the gall bladder was considered doubtful. The gall bladder was believed to be merely a reservoir for the bile produced by the liver and evacuated by the movements of respiration and intestinal peristalsis. This theory was expressed repeatedly by surgeons because of contraction of the gall bladder had never been observed during the course of an operation.

The most important researches regarding the function of the gall bladder were made by Westphal. Westphal came to the conclusion that emptying of the gall bladder is brought about by gall bladder contractions and widening of the entire pyloric area in conjunction with stimulation in peristaltic function resulting from

The pyloric and gastric action seems to be based on a similar stimulus occurring either through the blood or by way of the nerve pathways.

The author next discusses the Westphal theories concerning the formation of gall stones and describes the experiments on which they were based.

For the roentgen visualization of the gall bladder Schaefer recommends the intravenous administration of tetragast. No injury to the fetus from this procedure has been observed. The various findings of roentgenological visualization of the gall bladder during pregnancy and the puerperium are reviewed. A number of observers have noted a distinct delay in the emptying time.

The author next reports researches which he carried out on twenty-nine healthy pregnant women. The women were carefully prepared for the examination as careful preparation is essential for a successful study. The roentgenograms were made with the Gigantoscope apparatus with 70 k. 60 ma. exposure up to one second (depending upon the circumference of the abdomen) and filtration with 1 mm. of aluminum. The emptying of the gall bladder was tested with the Dotter meal recommended by Bronner. With this procedure all except one of the gall bladders showed a delay in emptying during pregnancy. Whereas normal emptying is completed after one and one-half hours, a quite large shadow could often be seen after six hours. To determine

whether the delay in emptying was due to a change in the nervous system or to a mechanical factor Schaefer administered from 0.3 to 0.5 mgm. of atropin subcutaneously to counteract the increased vagal stimulation which was assumed by Westphal to occur during pregnancy. When the Dotter meal was given half an hour after the administration of atropin the gall bladder became empty within 15 to 20 hours even in the ninth and tenth months. However in most cases a very small residuum the so-called residual bile which according to Westphal is of great importance in the formation of stones still remained.

During and shortly after labor a delay in the emptying time of the gall bladder could no longer be demonstrated. Serial roentgenograms were made of the gall bladder during its period of activity with the aid of the apparatus used for serial roentgenogram of the duodenum. In a fluoroscopic study of the excursions of the diaphragm which are supposed to be partly responsible for the formation of gall stones it was found that even in the tenth month there was no important limitation of diaphragmatic movement.

From a chemical study of the formation of cholesterol stones the author came to the conclusion that the described functional changes in the gall bladder together with the changes occurring in the concentration of the bile during pregnancy may favor the formation of such stones. SCHAEFER (11)



# GENITO-URINARY SURGERY

## ADRENAL, KIDNEY AND URETER

Rose D K. Hamam W F Moore S and Wilson H M The Kidn y Pelvis Normal Variations in Their Shape and Flow with Possible Pathological Significance *Surg Gynec & Obst* 1912 1

A dysuric kidney pelvis is defined as one which is generally regarded as normal yet may permit stasis of urine and thus predispose to pathological changes in the organ in which stasis is a recognized etiological factor. A non-dysuric kidney pelvis is one which permits the free flow of urine through all of its parts. The dysuric kidney pelvis may be either actively or potentially dysuric that is the flow may be imperfect in the absence of a secondary factor or the interference with the flow may be secondary to external interference with the drainage system causing dysfunction.

No special type of kidney pelvis can be termed dysuric arbitrarily from its gross appearance. Before a kidney can be called dysuric or non-dysuric its drainage system must be analyzed according to pelvic and calyceal capacity, contour and the angles of junction of one part with another.

The findings of a study of the histone and pyelograms in 385 cases are summarized as follows:

1. Of 79 cases of normal kidneys in which a pyelographic study was made to rule out renal or lower urinary tract disease only 17 showed a dysuric type of kidney pelvis and in these the abnormality was very slight.

2. Of 41 cases of renal calculus the pelvis was of the dysuric type in 33 of a non-dysuric type in 4 and of an undetermined type in 4. In 14 of the dysuric and 1 of the non-dysuric pelvises there was an associated pelvic infection.

3. Of 33 nephritic kidneys without other demonstrable cause for pain only 2 were non-dysuric and 31 were dysuric.

4. Of 43 cases of nephroptosis with resulting symptoms the renal pelvis was of the dysuric type in 29.

5. Of the 11 cases of renal tuberculo the pelvis was of the dysuric type in 9 and of a non-dysuric type in 2. In 1 its classification was impossible because of the great amount of destruction of kidney tissue.

6. Of 10 cases of idiopathic hematuria the pelvis was of the dysuric type in 7.

7. A study of 135 cases of pyelonephritis indicated that under similar conditions non-dysuric pelvises will be cleared of infection more rapidly and in a larger number of instances than dysuric pelvises.

8. The dysuric kidney pelvis should be added to the etiological factors of the pyelonephritis of pregnancy.

nancy. The prognosis of the latter condition is affected by the degree of dysuria present.

The final importance of dysuric pelvis lies in the facts that they permit urinary stasis in all or a part of the pelvis and that this stasis is of importance in the formation of calculi, the occurrence and continuation of infection (simple or tuberculous) and the causation of idiopathic hematuria and nephralgia. WILLIAM G. HARRIS, M.D.

Burghle T. A Contribution to the Study of Renal-Ureteral Anomalies (Contribution à l'étude des anomalies réno-urétérales) *Lyon chir* 1933 xxx, 85

As the result of the improvement which has been made in the technique of intravenous pyelography and in cystoscopy a diagnosis may be made of anomalies which otherwise could be found only by operation or autopsy. About 5 per cent of persons have some anomaly of the urinary system. This is explained no doubt, by the fact that the development of the kidneys passes through three stages: pronephros, the mesonephros and the metanephros.

The anomalies may be classified into the following five groups: (1) anomalies of the histological structure of the kidneys (leading to such conditions as polycystic degeneration); (2) anomalies of form (such as horseshoe kidney and persistence of fetal lobulation); (3) anomalies of position; (4) anomalies of number (supernumerary kidney); and (5) anomalies of the kidney pelvis and ureter. Detailed figures are given for the incidence of the types of anomalies mentioned. Some types of anomalies are more common in one sex than in the other. Malformations of other organs, particularly the genital organs are frequently associated and as a rule are found on the same side of the body.

The relation of congenital anomalies to blood typing is discussed but the author's data are insufficient to warrant definite conclusions.

Burghle reports in detail twenty-five cases illustrative of the various anomalies.

MARSH W. POOLE, M.D.

Vernière P. A Contribution to the Study of Intrarenal Absorption (Contribution à l'étude de l'absorption intrarénale) *J d'urologie* 1933 xxx, 1, 27

In a study of intrarenal absorption which the author made on animals a suspension of India ink was placed in the lower part of the ureter under a pressure barrel sufficient to introduce it. The ureter was then tied and at varying times thereafter the animals were sacrificed and the kidneys were studied.

In portion of the gross specimens and of stained and cleared slides showed that considerable absorption

had occurred. This was demonstrated in the cell of the pelvis mucosa the collecting tubules the convoluted tubules in the subcapsular tissue the perirenal tissue the lumbar wall and the venules and lymphatics. The absorption began within one hour reached its maximum in from sixteen to eighteen hours and then decreased.

The extensive absorption of such a substance proves again the enormous absorptive power of the kidney and pelvis and shows the danger of introducing foreign material into the kidney pelvis and the possibility of toxic absorption in obstructive lesions.

JOHN W. TITON, M.D.

**Cifuentes P.** Local action of Renal Tuberculosis by Intravenous Pyelography in Cases in Which Cystoscopy Is Impossible (*La calización de la tuberculosis renal por la pielografía intravenosa en los casos de cistoscopia imposible*). *Act. Soc. de Cir. de Madrid* 1933, 1: 83.

Although descending pyelography with uroselection or abrodil does not yield as clear pictures as ascending pyelography or direct injection into the renal pelvis or show the presence of small lesions it gives an approximate idea of the form and functional condition of the kidney in cases in which ureteral catheterization is impossible. The outline of the pelvis and calyces is of greater importance than rapidity of elimination. The indications for operation depend upon whether with normal total renal function the pyelograms show marked differences on the two sides.

If when the tests of total function are satisfactory the shadow appears early and is of normal contour on one side but appears late and is deformed on the other side the latter is probably the side involved and nephrectomy is permissible. When with the same picture the total renal function is deficient operation is usually inadvisable. Even if with satisfactory total function there is doubt as to the complete integrity of the more normal kidney removal of the diseased kidney is not contra-indicated as this kidney is not excreting and may constitute a dangerous focus of infection.

When the differences between the two sides are slight in both the first and second plates operation is generally contra-indicated in cases of abnormal and retarded shadows on both sides as well as in those with apparently normal shadows. However if elimination is good the Rossing-Kuster exploratory operation may be done. In these exceptional cases the differences between the two sides can be appreciated only during the Rossing-Kuster phenol sulphophthalein test and the blood urea are unsatisfactory. Operation is inadvisable because although one kidney appears normal or almost normal it always contains some abnormality which cannot be evaluated. The tests for elimination indicate that there is insufficient normal parenchyma to avert postoperative uræmia.

In summarizing the author says that intravenous pyelography is of aid in cases which show a great

difference in the lesions and function on the two sides but is not a guide to intervention when there is no marked difference.

A number of illustrative cases are reported with roentgenograms. In some of them later ureteral catheterization demonstrated the agreement of results by the two methods and the correctness of the decision with regard to operability.

M. E. MORSE, M.D.

**Lieberthal F. and Huth T.** Tuberculous Nephritis and Tuberculous Bacilluria. Pathology and Bacteriology. *J. Urol.* 1933, 1: 153.

The authors present the results of a study of 1,000 cases of renal tuberculosis report eight illustrative cases and cite evidence in support of their theory that tuberculous nephritis is an incipient surgical tuberculosis. They believe that inflammatory foci which have been described by others as tuberculous nephritis are secondary non-tuberculous inflammatory changes. They attribute the bacilluria in these cases to minute undiscovered ulcerative tuberculous lesions of the kidney. They state that nephrosis may develop as the result of pulmonary tuberculosis but glomerulonephritis is due to secondary infection. Such incipient ulcerative tuberculous lesions may be present in the absence of pus cells in the urine and of evidence of lowered kidney function and with normal bladder findings on cystoscopic examination. Occasionally they may heal but in the authors' opinion they are responsible for transitory tuberculous bacillurias.

DONALD K. HIBBS, M.D.

**Cirillo N.** Considerations on Some Cases of Bilateral Reno-Ureteral Lithiasis and of Lithiasis in a Solitary Kidney (Considerazioni per alcuni casi di calcolosi eno-etero-bilaterale e di calcolosi a rene unico). *Chir.* 1933, 17: 57.

Following a report of three cases of bilateral reno-ureteral calculi and two of calculi in a solitary kidney Cirillo reviews the symptoms, prognosis and treatment of these conditions. The surgical treatment indications for operation and operative technique are discussed in detail.

Cirillo believes that in cases of bilateral renal lithiasis the more diseased side as determined by roentgenological and functional tests should be operated on first for if nephrectomy should become necessary later on account of the severity of the renal lesion or secondary hemorrhage or if the function of the kidney operated upon should be temporarily impaired after the operation it is better to rely on the better functioning kidney than on the more diseased kidney. However he presents also the views of surgeons who operate first on the kidney with better function.

Following the removal of calculi from a solitary kidney particularly in cases in which the stones are located in the calyces Cirillo performs a permanent nephrostomy to favor drainage and thereby possibly prevent the formation of new calculi.

PETER A. ROSI, M.D.



relaxation Relaxation results if the spasm is mediated through the nerve or the muscle or both

3 Both papaverin and visamin relax plain muscle tissue by direct action In the same concentrations papaverin is more effective than visamin on the intestine but less effective than visamin on the human ureter and the ureter of the bull Visamin is therefore superior to papaverin for the treatment of spasm of the ureter or ureteral stone Relaxation of the ureter results if the spasm is mediated through the nerve or muscle or both

CLAUDE D HOLMES M D

Rolando S Observations on Ureteral Lithiasis  
(Observation sur lithase urétériale) J de l  
méd et chir 1933 27 143

Rolando reports seven cases of ureteral stone to show the possibilities of endoscopic and operative treatment

In the first case the stone had probably been lodged in the ureter for eight months By repeated ureteral catheterizations and injections of glycerin the stone was made to descend from the level of the fourth lumbar vertebra Appearing in the ureteral orifice after four months it was released by ureterotomy performed by electrocoagulation In the second case the stone was eliminated after one month of treatment These cases demonstrate that with sufficient persistence on the part of both the surgeon and the patient operation can be avoided if the diameter of the stone does not exceed 1 cm and there are no serious complications

In the five other cases operation was necessary because of large size of the stone or complications

Stones often remain lodged in the ureter for weeks or even years without causing great inconvenience to the patient or appreciable damage to the kidney In some cases they may be entirely latent and discovered only in the course of an X ray examination for some disorder other than lithiasis Latency is usually explained by a special configuration of the stone which allows the urine to pass

Dilatation above the obstruction may or may not be present When the obstruction is acute the secretion of urine is often inhibited By this mechanism the grave lesions incident to hydronephrosis are prevented The inhibition may last for months and may be followed by re establishment of the urinary function

The author has found the operative treatment of ureteral calculi extremely satisfactory In the absence of serious urinary infection operative complications are rare Certain pre operative measures are essential The location of the calculus should always be verified immediately before the intervention with the patient in the Trendelenburg position

A calculus which occupies the transverse portion of the ureter appears in the roentgenogram about 2 cm lateral to the border of the last sacral vertebra on a line joining the upper borders of the acetabula When the intramural and extracalicular portion has been reached the stone lies at the lateral border of the

sacrococcygeal articulation 2 cm below the interacetabular line When the stone has penetrated the bladder it is in front of the articulation and slightly to one side of the median line

When the stone is in the lower portion of the ureter i e at or below the interacetabular line it should be displaced upward with the finger in the vagina or rectum as in this way it may be rendered more accessible at operation

The author performs ureterotomy by the standard extraperitoneal technique Removal of low lying stones is facilitated by having an assistant steady the stone with a finger placed in the rectum or vagina When the point of impaction is surrounded by inflammatory tissue it is preferable to incise the ureter at a higher level than to attempt to isolate it in the midst of the sclerotic mass The stone can then be extracted with a forceps

In the cases reviewed the author employed intravenous urography ALBERT F DE CROAT M D

Ilizaroff I O and Tzhvetadzé J J Implantation of the Ureters in the Skin in Total Extirpation of the Urinary Bladder (Su l implantation des uretères à la peau dans l'ablation totale de la vessie) J de l'éd et chir 933 2 v 473

The chief problem in extirpation of the urinary bladder is the disposal of the ureters A choice must be made between implantation into the intestine and implantation into the skin Implantation of the ureters into the intestine is frequently followed by poor immediate or late results According to statistics collected by Smitten the hospital mortality in 316 cases in which such implantations were done was 36.8 per cent and in cases in which the operation was performed on account of a malignant tumor it was 63.8 per cent Nephropathy is an inevitably fatal complication The effects produced on the intestine are not negligible colitis even ulcerative colitis has resulted In addition there may be general symptoms due to continued reabsorption of urine and fluid faeces changes in the bacterial flora of the colon and lesions of the intestinal wall

Implantation of the ureters into the skin was first proposed by Gigon in 1856 and was performed for the first time by Le Dentu soon thereafter Subsequently this operation was abandoned until quite recently

Implantation into the skin is relatively simple and as it is an extraperitoneal operation is associated with relatively little immediate risk Pelletis occur frequently but its treatment by lavage is facilitated by the accessibility of the ureter In fact the possibility of active treatment of renal infections greatly extends the limits of operability The authors prefer inguinal ureterostomy to the lumbar ureterostomy because it is associated with less danger of linking of the ureter Moreover the patient can apply the apparatus without aid Among the complications are sloughing of the end of the ureter and stricture Neither of these is frequent or greatly jeopardizes the success of the operation

Wu P P T The Relative Activity of Various  
Portions of the Excised Ureter of the Dog  
J U I 1933 xxx 307

Twenty four excised ureters of dogs were studied immediately after their removal from the body and refrigerator for from two to ninety six hours. The degrees of activity of the pelvic middle and vesical thirds when placed in oxygenated Ringer Locke solution at a temperature ranging from 37.5 to 38.5 degrees C. were compared.

The wall of the ureter contains all the factors necessary for independent activity. The excised segments contracted spontaneously.

Of fourteen ureters in which there was apparently no extraneous factor to be considered the greatest degree of activity was shown by the pelvic third in six and by the middle third in six. The vesical third was least active in ten and most active in none.

A perfect gradient in the rate of rhythmic contraction with the greatest rate in the pelvic end was found in seven ureters. 46.5 per cent of the more satisfactory experiments. A perfect gradient in the reverse direction was found in two ureters but in both of these the blood supply to the upper portion was disturbed prior to excision.

It was sometimes possible to reverse the gradient in the ureter.

Barbera G A Contribution on the Surgical  
Treatments of the Painful Syndromes Due to  
Malformations and Dyskinesia of the Pyelo-  
Ureteral Apparatus Associated With Malforma-  
tions of the Lumbosacral Spine (Cattedra di  
Chirurgia dell'Addome e del Pelvis) 1933

Recently attention has been called to the frequency of pain syndromes of the urinary tract in cases of malformation of the lumbosacral spine. The pain occurs in or about the lumbar region often times simulates renal colic or thigh and at times hematuria but examination of the urinary tract shows no evidence of stone or inflammation and kidney function is normal. The author studied thirty cases with a pain syndrome and three with hematuria and no pain.

The relationship between the vertebral malformations and the painful pyelo-ureteral syndrome is not clear. However the frequent association of spinal bifida and anomalies of the genital and urinary tracts is well known. In reviewing the embryology the author states that while there is no direct relationship in the development of the spine and urinary tract there is an intimate relationship between the development of the spine and the spinal and sympathetic nerves. He attributes the pain syndrome to some unknown type of irritation of the sympathetic plexus innervating the kidney pelvis and ureter and believes that it may be a true neuritis. If this

assumption is correct the treatment of the condition should be a surgical procedure carried out with care not to disturb the normal physiology of the pyelo-ureteral tract.

On the basis of this theory Barbera made a careful study of the innervation of the kidney pelvis and the upper part of the ureter. He states that the kidney pelvis and the upper part of the ureter are supplied by nerves from the renal plexus whereas the lower part of the ureter is supplied from the hypogastric plexus. He describes the complicated structure and connections of both of these plexuses in detail.

The sensibility and the motility of the ureteral tract are discussed on the basis of abdominal innervation. It appears that the treatment condition under consideration should be directed to some interference with the nerve supply. All methods have been suggested. Anastomosis of the splanchnics has been done. Section of the peduncle of the renal plexus may be performed. Subdiaphragmatic splanchnicotomy has been recommended. Jari has suggested section of the communicating of the twelfth dorsal first lumbar and possibly the second lumbar spinal nerves. Barbera believes that the attack should be made at the nerve endings in the adventitia of the kidney pelvis and ureter. He suggests liberating the pelvis and ureter from the adventitia by blunt dissection with care to avoid injury of the blood vessel. Larger nerve strand encountered in the dissection may be severed. This treatment will not disturb the function of the tract.

Barbera reports three cases all those of young females in which he performed this operation successfully for relief of the painful pyelo-ureteral syndrome. Within a few days after the operation the function of the entire urinary tract was normal according to all tests now known.

Samaan K The Pharmacological Basis of Drug  
Treatment of Spasm of the Ureter or Bladder  
and of Urinary Stone B J U I 1933 v 3

The author made comparative studies of the effect of papaverin, atropin and visamin on the intestine and virgin uterus of the rabbit, the ureter of the bull, the human ureter and the bladder of the dog. As visamin was found superior to papaverin and atropin in relaxing the human ureter it was tried in the treatment of clinical cases of ureteral stricture. Samaan reports a case in which its use was followed by the passage of two impacted stones. The findings of his experiments and his conclusions are summarized as follows:

1 Atropin relaxes the intestine and the virgin uterus of the rabbit, the ureter of the bull, the human ureter and the bladder of the dog when these tissues are rendered spasmodic by parasympathetic stimulation but fails to relax them when the cause of the spasm is directly muscular.

2 In the bladder and the uterus visamin and papaverin are of practically equal value in causing

relaxation Relaxation results if the spasm is mediated through the nerve or the muscle or both

3 Both papaverin and visammin relax plain muscle tissue by direct action In the same concentrations papaverin is more effective than visammin on the intestine but less effective than visammin on the human ureter and the ureter of the bull Visammin is therefore superior to papaverin for the treatment of spasm of the ureter or ureteral stone Relaxation of the ureter results if the spasm is mediated through the nerve or muscle or both

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# INTERNATIONAL ABSTRACT OF SURGERY

Extirpation of the bladder is a relatively benign operation. Fedoroff reports 17 cases in which it was done with no mortality. The authors report 5 cases in which the uretersotomy functioned satisfactorily. One of the patients died of metastasis and another of coronary embolism but the 3 others were permanently cured. All were operated upon for bladder tumors.

ALBERT F DE GROAT M D

## BLADDER URETHRA AND PENIS

Fagerstrom D P Perforation of the Urinary Bladder by a Pilonic Abscess J U of 1933 xxx 27

The author reports a case of chronic parametrial abscess at the base of the right broad ligament which communicated with the bladder by a circuitous route. Closure of the opening into the bladder and drainage of the abscess resulted in complete recovery. Also reported is the case of a male who sought treatment for recurrent attacks of pyuria with severe pain and frequency. Cystoscopic examination revealed a small opening covered by a polyp and communicating with an abscess cavity in the perivesical tissues. The fistulous opening closed spontaneously.

Prakken J R Raphial Cysts of the Penis (Rhaphe cyst n des Penis) Neder T j d k G k 1933 p 1784

The author reports two unusual raphial cysts of the penis, one a mucous cyst in the region of the urethral orifice which could not be examined and the other a cyst between the folds of the prepuce which was filled with sebaceous material. The wall of the latter consisted of transitional epithelium in the outer part and of layered pavement epithelium (metaplasia?) in the deeper part. According to Marchadier such cysts are due to persistence of the double epithelial margin closing the urethra during embryological development.

C E JANCKE (Z)

## GENITAL ORGANS

Papin E Endoscopic Operations In Hypertrophy of the Prostate and Sci roses of the Neck of the Bladder (Sur le opérati on end scopique ds ns l'hypertrophie de la prostate et les sci roses du col) A ch d mal d ens i d org g l o-u na 933 vii 4 6

The author gives abstracts of articles published in a number of American journals all of which are very enthusiastic regarding endoscopic operations on the prostate and neck of the bladder. They say that it is not necessary to remove any great amount of prostatic tissue, only the part which obstructs the flow of urine need be removed. Generally the median lobe or the posterior commissure. The technique with the new instruments now available is simple for the urologist who is well trained in endoscopy. The treatment can generally be carried

out in one or two sittings. It is very different from the old treatment with the galvanocautery or the troacutery which required many treatments and produced foci which readily became infected.

The current used is a high frequency current either a cutting current or a coagulating current. However the cutting current coagulate to a certain extent and the coagulating currents cut to a certain extent. Different forms of apparatus are discussed. Some surgeons use the two forms of current successively having two sources of current and a foot commutator. This method which is only an application of the radiobistoury seems to be the most practical and the safest. The electrodes vary in shape sometimes they are a mere point and sometimes a loop or a knife. Most of the results reported are favorable and the operation is represented as a minor surgical procedure which keeps the patient in bed for only a short time.

The author believes that the enthusiasm expressed is premature. His experience has not shown it to be justified. For many reasons not the least of which is the possibility of later malignant degeneration of patients who are in good condition. The endoscopic operation may be indicated when the patient is in very poor condition and radical operation is absolutely contra indicated when he is in mediocre condition and radical operation involves considerable risk. When examination reveals only slight lesions in the middle lobe or only a sclerosis of the neck and when the patient refuses radical operation.

AUDREY GOSS MORGAN M D

## MISCELLANEOUS

Ambard L Stahl J and Kuhlmann D Azotemia and Chlo opnia (Le tème t chl ropénie) A k d mal d i d org s k o- 1933 vii 465

Azotemia has frequently been noted in chloro pneumonia but there are also cases of chloroemia in which it does not occur. In an experiment carried out by the author to determine the relationship between the two conditions a dog was dechlorinated by means of a diet poor in salt and by the induction of vomiting. During the first part of the experiment he was given a soup made of 200 gm. of lean meat potatoes bread without salt and about 1 liter of water. In the second part he was given 500 gm. of meat rich in fat and bone and as much water as he wanted. To remove the salt from the body—when a salt poor diet will not do—he was given an injection of 400 mgm. of histamine which causes a salty secret on in the stomach and twenty minutes later was repeated two or three times a day and he was fed the evening.

The amount of chlorine in the body was determined from the chlorine content of the blood plasma. The chlo opnia or decrease in the amount of chlorine in the body did not affect the animal's weight.

this remained about the same throughout the experiment. Neither did it affect his appetite. These facts disprove the assertion often made that a deficit of salt in the organism is a cause of anorexia and disturbances of nutrition.

The refractometric index varied little during the soup diet but rose distinctly when the meat diet was given. It did not seem to be affected by the chloropenia but was apparently influenced by the amount of water in the diet. The alkali reserve rose as the amount of chlorine fell. The amount of urine was large on the soup diet and small on the meat diet showing that it was affected by the amount of water in the diet and not by the low amount of chlorine. A number of clinicians have reported that chloropenia causes oliguria and a number have reported intense albuminuria in azotemia with chloropenia. The authors dog did not have albuminuria.

When the dog was on the soup diet azotemia was not increased in spite of the marked and prolonged chloropenia. When he was on the meat diet more nitrogen was ingested and there was an initial azotemia but after a few days of hypochloræmia a sort of re adaptation of the kidney seemed to take place at least for chloræmia not lower than 250 gm. This brings up the question whether the transitory azotemia was caused by the hypochloræmia or by the accompanying dehydration.

The only definite conclusion the authors are able to draw is that under the conditions of their experiment in which there was marked hypochloræmia they did not note the great increase in the blood urea which has been reported by others. Accordingly they believe that there are factors in the problem which are still unknown.

ART. LX COSS MORAN AND



# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES JOINTS MUSCLES TENDONS ETC

Dyle S C Walker R M and Freeman E Ad-  
enoma of the Parathyroid Associated with  
Generalized Osteitis Fibrosa La et 633 1933  
530

The authors present a brief discussion of osteitis  
fibrosa and report two cases in which parathyroid  
tumors were found and definite improvement in the  
condition followed removal of the tumors

CITIER C GUY MD

Kuhns J G Lymphatic Drainage of Joints A  
S 12 1933 22 345

The lymphatic drainage of joints occurs by two  
channels a deep and a superficial trunk. In the  
lower extremity the deep trunk follows the femoral  
vein and drains the tissues beneath the superficial  
fascia into the popliteal deep femoral and iliac  
nodes whereas the superficial trunk accompanies  
the great saphenous vein draining into the popliteal  
and inguinal lymphatic nodes. In general these  
two main systems function normally as separate  
entities but there is evidence that intercommunica-  
tion may occur.

The author reports experiments on rabbits in  
which India ink was injected into the joints. The  
lymphatic absorption from the hip joint occurred  
through the deep system to the iliac lymph nodes.  
In no case was there any absorption into the inguinal  
lymph nodes. The lymphatic drainage of the joints  
was proved to occur by way of the so-called deep  
system to the lymph nodes draining the deep system.

In an attempt to produce a mild arthritis in the  
joint solution of potassium iodide were injected.  
Athritis developed gradually but subsided in  
about two months. There was never any pannus  
formation and the erosion of cartilage and destruc-  
tion of cartilage cells were slight and superficial.  
In another series of experiments in which tubercle  
bacilli were injected into the knee joint for several  
weeks at weekly intervals examination showed no  
joint infections and cultures from the joints made  
at necropsy were negative.

The author's findings with regard to the lymphatics  
of the joints of rabbits were confirmed by  
synovial tissue obtained from human joints. When  
no disease of the joints was noted on clinical or  
microscopic examination the lymphatics were  
readily demonstrated by the use of hydrogen  
peroxide whereas in the presence of arthritis or  
chronic bursitis polyphagocytic vessels could be found  
in most cases. Kuhns believes that under the latter  
circumstances no normally functioning lymphatics  
were present.

In conclusion he says that while we do not ex-  
actly know what rôle this functional disturbance of  
the lymphatic vessels plays in arthritis there is  
evidence that it is an important factor decreasing  
absorption and preventing the abatement of swelling  
in the synovial membrane.

PART C COLONY MD

Wass Joffe A The Influence of the Nervous System  
on the Healing of Wounds of the Striated  
Musculature (Leber den Einfluss des nerven-  
systems auf die Heilung der Wunden der ge-  
streiften Muskulatur) A h f H n Ch: 911  
1931 69

The author states that nothing definite is known  
as to which parts of the nervous system influence  
regeneration of the striated musculature. The in-  
jury to the muscles may consist of some form of  
trauma or of toxic degeneration or necrosis. Under  
the latter circumstances regeneration takes place  
at the expense of cells of an embryonic nature (sarco-  
blasts) whereas under the former circumstances it  
takes place by continuity through the development  
of terminal buds from the old muscle fibers where  
the connective tissue replacing the defect becomes  
penetrated and restored. The development of  
terminal buds was observed by Volkmann as early  
as six months after operation.

In one of two series of experiments reported the  
entire lumbosacral trunk of one side and in the  
other the sciatic femoral and obturator nerves  
were cut successively in a series of operations. In  
addition a piece of muscle measuring 1 by 0.5 cm  
was cut out from the quadriceps muscle on both  
sides. The subsequent examinations were made  
from five to twenty days and one two three and  
six months after the operation.

It was found that a decidedly quicker maturation  
of the granulation tissue with definite collagenous  
fibers took place on the sympathetomized side.  
On the side not operated upon polymorphonuclear  
leucocytes predominated whereas the fibroblasts  
were less numerous. In the later stages the sym-  
pactotomized side showed in addition to the globular  
thickenings corkscrew like and awl shaped proto-  
plasmic figures which permeated the granulation  
tissue. When the removal of the ganglia and the  
sympathetic tracts was insufficient the characteristic  
microscopic picture was disturbed.

The result in the second series of experiments  
with section of the sciatic and other nerves was also  
negative. The operation had no influence on re-  
generation. This finding is in agreement with the  
observations of Kureyevsky Imagawa and  
others who found a change in the response to  
electrical stimulation analogous to that in progres-

sive muscle dystrophy only in sympathectomized muscles. However, the minutiae of the sympathetic innervation depend not upon a single ganglion but upon the very large divisions of the sympathetic nervous system. Denudation of the common iliac and femoral arteries had no effect on regeneration.

J. VOLLMANN (Z)

Grisel P. and Apert E. Congenital Atlo Occipital Synostosis. Report of a Fatal Case. (L. synosto occipit. atl. due ne c. n. fatale. d'après. n. c. m. riel.) J. se. m. d. 13 1933 v. 397

The authors report the postmortem findings in the case of a child fifteen and a half years of age who died four months after the onset of symptoms of inferior bulbar myasthenia. These findings showed that the syndrome was due to rotation and luxation of the atlas. As congenital abnormalities were overlooked at the first examination and there was no history of trauma and no evidence of an inflammatory reaction or tuberculosis, the luxation was difficult to explain. Two years later a more careful study of the occipital bone atlas axis and third and fourth cervical vertebrae disclosed the following anomalies: (1) right atlo occipital synostosis, (2) left atlo occipital synostosis and (3) posterior atlo occipital synostosis. These are described in detail with records of the distance and angles.

The authors discuss also at considerable length the intra uterine and extra uterine mechanisms concerned in the production of such anomalies.

MARSH W. POOLE M.D.

No. 6 Josseland and Pouzet. Anatomical and Clinical Considerations Regarding Adolescent Coxa Vara. (C. de t. n. a. t. mo. d. n. g. u. e. s. r. f. a. c. a. d. a. d. o. l. n. t. s.) L. s. h. 933 x 189

The authors review twenty three cases of adolescent coxa vara—twenty which they have followed for some time and three which were seen because of late complications.

They state that the lesion is not discovered in the early stages because the early signs are too slight to attract attention to it. The roentgen appearance is that of a spotty shadow limited to the juxta epiphyseal region. This typical appearance of the neck of the femur is present in almost every case whether the symptoms have developed rapidly or slowly.

As the condition progresses the neck of the femur becomes curved and shortened. The character of the changes depends somewhat upon the rate of development of the condition.

The epiphysis becomes displaced by slinging off the abnormal neck slowly or quite suddenly as the result of slight trauma.

Recovery takes place by calcification. In the more rapid type the callus appears quickly.

The rôle of articular lesions in adolescent coxa vara is difficult to determine. In the cases studied by the authors involvement of the joint was apparently rare.

The anatomical end result ranges from partial restoration of the hip to marked contraction due to almost complete destruction of the head and neck of the femur.

The article contains a large number of roentgenograms.

MARSH W. POOLE M.D.

Inge G. A. L. and Ferguson A. B. Surgery of the Sesamoid Bones of the Great Toe. An Anatomical and Clinical Study with a Report of Forty One Cases. J. ch. s. r. 1933 x. 1. 466

The authors discuss the anatomy and pathology of sesamoid bones of the great toe and review the findings of a study of over 1000 roentgenograms of the feet. The history of the surgery of sesamoid bones of the great toe and the reports of 41 cases in which sesamoidectomy was done at the New York Orthopedic Hospital.

They state that the sesamoids of the great toe are essential parts of the skeleton appearing early in fetal life. Bipartite sesamoid is a frequent anomaly being found in 10.7 per cent of the feet examined roentgenologically in their clinic.

Among the illustrations in the article is a diagram of the most common anomalies. Attention is called to the variations which are responsible for the most frequent fractures of sesamoid bones. In the cases reviewed only a positive sesamoid fracture was found. In no case was specific disease of the sesamoid discovered. The authors attribute pain in the region of the sesamoid to: (1) associated chronic arthritis, (2) chronic or subacute bursitis and (3) medial luxation of the medial sesamoid following an operation for bunions.

Of the 41 patients whose cases are reviewed 70.8 per cent were benefited by the sesamoidectomy. For the best results the operation should be supplemented by physical therapy.

The authors reserve operative treatment for cases which fail to respond to conservative treatment.

ROBERT C. LONGERGAN M.D.

## SURGERY OF THE BONES JOINTS MUSCLES TENDONS ETC

Webster L. A. The Treatment of Poliomyelitis Sequelae in the Foot. (Il. tratament de las sequele p. l. mielit. c. del pic.) Rev. d. top. y. i. 11. 933. 373

Webster reviews fifteen cases of poliomyelitic deformities of the foot and discusses the examination of the affected foot, the general principles of treatment, the types of deformities, their treatment and the final results obtained in each and the prevention of poliomyelitic deformities.

He concludes that surgical intervention should be resorted to only after an interval of three years from the onset of the paralysis and never in the cases of children under six years of age. The combination of therapeutic procedures must be determined for each case. Plastic operations on the tendon of Achilles muscle transplantation arthroplasty and

tenodesis are of great value in combination but separately are sufficient to correct the deformity in only a few cases. Brilliant results are obtained by arthrodesis. However as this is an anphysiological procedure it should be employed only when correction by other means is impossible. For drop-foot tenodesis combined with arthroplasty is better in principle than multiple arthrodeses but should not be performed on children under fifteen years of age. In talipes calcaneus oblique osteotomy is an excellent method of correction. As tarsotomy and astraglectomy are mutilating operations they should be limited to severe and persistent deformities.

The article contains a large number of illustrations and has an extensive bibliography.

M. E. Morse, M.D.

Strombeck, J. P. Hallux Rigidus and Its Treatment (Hallux rigidus und seine Behandlung). *Arch. f. Chir. u. Gyn.* 1933 LXXIII, 33.

Following a review of the literature on hallux rigidus the author reports twenty three cases.

The chief symptoms of hallux rigidus—limitation of dorsal flexion in the basal joint of the big toe—is caused by contracture of the short flexor with subsequent plantar contracture of the soft parts. The contracture is a common complication of arthritis of the basal joint of the big toe. The arthritis may be regarded as a consequence of excessive weight bearing and occurs in the presence of certain anomalies of the foot skeleton. It leads to early deformities which can be seen on roentgen examination. The contracture is not of great importance in the production of arthritic deformities.

In the treatment of some of the author's cases removal of the dorsal exostosis was sufficient. In mild cases good results were obtained by tenotomy of the short flexors and in more severe cases by basal resection of from one fifth to one half of the basal phalanx and the interposition of fascia. Ankylosing operations should be avoided.

## FRACTURES AND DISLOCATIONS

Hellstedt, A. A Clinical Study of the Causes of Pseudothrosis of the Diaphyses of the Long Bones of the Extremities. *Acta Chir. Scand.* 1933 LXXXI, 1.

The author reports a clinical study to determine the causes of pseudarthrosis after fractures of the shafts of the long bones of the extremities. In cases of multiple fractures the union of several of the fractures was obviously inhibited a fact suggesting that in cases of pseudarthrosis there is a general predisposition toward poor callus formation.

In discussing double pseudarthrosis after fractures of both bones of the forearm the author rejects the theory of Martin that by some distant influence (sympathetic bone atrophy) a pseudarthrosis of the radius may favor the formation of a pseudarthrosis of the ulna. He believes that such

pseudarthroses are determined by the same factors as those determining other multiple pseudarthroses.

He states that there is no evidence that pseudarthroses are favored by a deficiency in vitamin C.

Cases are cited to show the exceedingly small tendency toward pseudarthroses in children as compared with adults.

A statistical study of the sites of pseudarthroses in the shafts of the long bones in relation to the arterial supply of the bones suggested that the arterial supply may play a part in the production of pseudarthroses.

In the author's cases pseudarthrosis was most common after comminuted fractures and next most common after transverse fractures. After oblique and spiral fractures it was uncommon. Its incidence was 7 per cent in cases of compound fractures and 4 per cent in cases of simple fracture treated by operation and 0.23 per cent in cases of simple fractures reduced manually.

Hematoma formation may be of some importance in the formation of callus by reason of its stimulating effect on the fracture hyperemia.

Pseudarthrosis has occurred with considerable frequency in cases of fractures treated by inlay grafting with the use of horn or ivory pegs or bone grafts. Whether or not osteosynthesis with metallic material has an unfavorable effect on the union of fractures cannot be stated with certainty.

Pseudarthrosis is considerably more frequent in cases of fracture operated upon during the first three days after the accident than in those operated upon later. This is probably explained by the fact that during the first few days there is not sufficient time for the hematoma to exert a stimulating effect on the fracture hyperemia and vascular proliferation.

As the majority of pseudarthroses occur after fractures caused by direct external violence laceration of the surrounding soft parts seems to be a factor in their causation. In some cases pseudarthroses may be favored by separation of the fragments in treatment by extension. Incomplete immobilization of the fracture seems to have an unfavorable effect on union only in its later stages in cases of delayed consolidation.

Boehler, L. The Causes and Prevention of Poor Healing of Bone Fractures (Die Ursachen der schlecht geheilten Knochenbrüche und ihre Verhütung). *Z. f. orth. Chir.* 1933 LIII, 54.

According to statistics published by Ruets in 1929 permanent compensation was being received by all of 47 persons with a fracture of the femur, 82 (90 per cent) of 86 with fractures of the bones of the leg, 41 (93 per cent) of 44 with a fracture of the ankle, 30 (90 per cent) of 34 with a fracture of the humerus, 37 (80 per cent) of 47 with a fracture of bones of the forearm, and 0 (82 per cent) of 21 with a typical fracture of the radius.

The injured were treated under very unfavorable external conditions. The poor results were due to

(1) deficient instruction (2) deficient organization and (3) the use of unsuitable methods of treatment.

The essentials of treatment in all cases are: (1) accurate reduction of the bony fragments (2) uninterrupted fixation of the properly reduced fragments until bony healing has taken place (3) during the time of the necessary immobilization of the properly reduced fragments active movement of as many as possible or of all joints of the injured extremity and of the whole body with avoidance of pain in order to prevent disturbances of the circulation atrophy of muscles and bones and stiffening of joints.

One of the following four methods of treatment is indicated depending upon the time that has elapsed since the fracture: (1) immobilizing treatment i.e. treatment with splints or different types of bandages or other firm material (2) treatment with permanent traction by various adhesive substances (adhesive plaster or mastisol) or directly to the bone (nail clamps wire) (3) mobilizing treatment (early massage and passive movements) and (4) operative treatment.

The simplest and safest treatment is immobilization with splints or plaster of Paris. Most disturbances can be avoided if the fragments are accurately reduced and held firmly in an unpadded plaster dressing without interruption until bony union is obtained. Treatment with a traction bandage is to be considered chiefly for fractures which cannot be held in a plaster of Paris dressing such as those of the femur. Mobilizing treatment can be used only for fractures without splinting.

Indirect measures promoting the formation of callus are the cause of poor healing of fractures since confidence in the callus formation causes immobilization to be discontinued too early. Necessary for callus formation are: (1) the stimulation provided by the injury to the bone (2) a sufficient blood supply and (3) sufficiently long uninterrupted immobilization of the properly reduced bony fragments.

One part of the article is devoted to fractures of the spine. A fractured vertebra may be firmly united in from six to eight weeks without reduction and in from three to four months with reduction. After this length of time a plaster of Paris corset is not only superfluous but harmful. The Bochum school has shown that after spinal injuries without paralysis the patient may get up at the end of six weeks and usually may begin light work after from three to four months. This school rejects not only the late corset but also reduction with subsequent immobilization and simultaneous treatment of the rest of the body by exercise. The reduction of a vertebral fracture under local anaesthesia is very easy. The good position can be retained with the aid of a plaster of Paris corset kept on for from three to four months. The patient can get up after eight days. The muscles do not become weak or the spinal column stiff. As causes of poor healing of bone fractures the author lists failure to reduce too long rest in bed and the wearing of a supportive corset after bony consolidation.

Fractures of the pelvis without other injuries are benign. Those with central dislocation of the head of the femur are treated with a continuous traction bandage for from ten to twelve weeks. Fractures of the neck of the femur heal with pseudarthrosis in coxa vara because they are not reduced. The fragments can be held firmly in good position only with a large plaster of Paris dressing or with a nail by the Smith-Petersen method. Fractures of the femur through the trochanter with wedging heal with coxa vara and outward rotation if they are not reduced and treated with an extension bandage for from ten to twelve weeks. Fractures of the shaft of the femur often heal with shortening and curvature. Sometimes also a pseudarthrosis occurs because the immobilizing dressings (plaster of Paris or continuous traction) are removed too early.

Patients with fracture of the patella without displacement can get up at the end of a few days wearing a plaster of Paris shell. Patellar fractures with diastasis can be healed only by operation. Fractures of the eminentia intercondyloidea can be properly reduced under local anaesthesia and will heal if a plaster of Paris dressing is applied for from six to eight weeks and the patient is allowed to walk in it. Fractures of the head of the femur should be treated with strong traction and immobilization of the reduced fragments for from six to eight weeks. Fractures of the shafts of the bones of the leg heal poorly when the period of immobilization is too short. Good reduction and sufficiently long immobilization (at least ten weeks in cases of transverse fractures) assure a good result. Fracture of the ankle with subluxation heal in an unpadded plaster of Paris dressing in from seven to ten weeks. Fractures of the astragalus the heel and the tarsus will heal in from eight to twelve weeks when properly reduced and immobilized for a sufficient length of time. In fractures of the metatarsal bones swelling of the foot occurs if the bones are not immobilized but if an ambulatory plaster of Paris cast is applied the patient is able to walk at once without pain.

Fractures of the clavicle should be treated without a dressing. Fractures of the humerus must be treated with abduction splints. Supracondylar fractures of the humerus are easily reduced by strong traction with pronation of the forearm and are retained in good position by firm bandaging. Fractures of the shafts of the forearm bones will heal well if they are accurately reduced and the fragments are held securely with wires passed through holes bored in the bones and immobilized for a sufficiently long time (from eight to ten weeks). In fractures of the lower end of the radius an unpadded dorsal plaster of Paris splint should be applied. Fracture of the scaphoid bone should be immobilized for six weeks. Old traumatic caecities can also be healed by immobilization.

In conclusion the author says that in the prevention of poor healing of fractures much could be accomplished if only a fraction of the money paid for after treatment were used for the first care and after treatment of injuries. When the economic im-

portance of accidents becomes more generally recognized there will be a change in the instruction given students and general practitioners. Minor urvers and the prevention of wound infection are of great importance. In Austria 1,375 persons died in 1931 from infection after wounds received in accidents and many times that number had their earning ability markedly and permanently reduced by phlegmons. The number of hospital beds for the treatment of fractures must be increased. Where bone fractures are treated a roentgen apparatus must be available in the operating room or adjacent to it.

HATMAN (2)

D. Francesco F. The Treatment of Complete Acromioclavicular Dislocation. *La terapia della lussazione completa acromio-clavicolare*. *Pol. It.* 1933 15 230

The author reports a case of complete acromioclavicular dislocation in a woman forty five years of age which he treated by a modification of the Benedetti Valenti method. In this operation the bone are fixed in place by passing a 3 mm strip of elastic rubber between the coracoid process and the clavicle in the form of a figure of eight to reinforce the weakened and relaxed coracoid and trapezoid ligaments. The conditions in a case before and thirty days after the operation are shown by illustrations.

In experiments carried out on two dogs and four rabbits De Francesco found that the rubber band was still elastic eight months after the operation although it was then well covered by connective tissue.

EUGENE T. LEBBY (1)

Thompson J. E. Fractures of the Carpal Navicular and Trapezium Bones. *Am. J. Surg.* 1933 22 274

Of twenty one fractures of carpal bones seen at the Roosevelt Hospital New York during a period of twelve months fifteen involved the navicular bone four the trapezium and two both of these bones. As the ordinary anteroposterior and lateral roentgenograms frequently failed to show a fracture the author recommends that oblique roentgenograms be made in all suspicious cases.

In the cases reviewed the trapezium was usually fractured in its mid portion while the navicular bone was fractured either through the tuberosity or through the neck of the body.

Thompson believes that non union is favored by abnormal friction between the fractured fragments rather than by deficiency of the local blood supply. He recommends prolonged immobilization by means of a dorsal moulded cock up plaster splint.

PACI C. COLOMBA (1)

Whitman R. The Abduction Method. *Am. J. Surg.* 1933 23 535

Whitman says that according to statistics from a variety of sources union of medial fracture of the femur occurs in approximately 65 per cent of cases treated by his abduction method. For cases in which

faulty treatment has been employed he recommends open operation and for those showing incapacity for repair he suggests the Whitman reconstruction operation. The latter consists in removal of the distorted head moulds of the remaining portion of the neck and transplantation of the trochanter with its attached muscles down the shaft.

Methods of spaving the fragments such as the use of the flanged nail advocated by Smith Petersen are rejected by Whitman as he believes that recovery depends on reconstruction of the bony structure and this will be retarded by the injury to the cancellous tissue caused by the introduction of a nail. He is of the opinion that many months are required for the repair of a medial fracture and doubts whether any form of operative intervention will greatly shorten the period of disability.

He states that the abduction method relieves the pain permits changes of posture and has not only greatly extended the range of the positive treatment of fractures but has materially reduced the death rate.

ROBERT C. LUTHERAN (1)

Mikkelsen O. Intra Articular Fractures of the Upper End of the Tibia. *Acta Orth. Scand.* 1933 12 111

This article is based on 160 cases of intra articular fracture of the upper end of the tibia which were treated at the Kommunehospital Copenhagen and 88 cases from the records of the Committee of Labor Insurance.

Of the 160 patients treated at the Kommunehospital 16 were re-examined from one to nineteen years after the accident. Of those whose cases are recorded by the Workmen's Compensation Board 22 were re-examined from two to five years after the accident and the others one year after the accident. The fractures are classified as follows:

- A. Unicondylar fractures
  - 1. Incomplete (a) fissures (6) (b) compression Complete (a) median (51) (b) lateral (116)
- B. Bicondylar fractures (a) Y and I fractures (25) (b) T fractures (16) (c) comminuted fractures (5)
- C. Fractures of the tibial spine (18)
- D. Other (rare) forms (9)

The figures in parentheses indicate the number of cases in the group or subgroup.

The proportional distribution of the cases in the various groups is about the same except that the severe bicondylar and comminuted fractures were six times more frequent in the Kommunehospital cases than in the Workmen's Compensation Board cases.

The mechanism and etiology of the various types of fracture are discussed. Only the treatment given in the Kommunehospital cases is mentioned. In this hospital conservative treatment is employed in the great majority of cases operation being performed only in a very few instances.

Chief among the conservative measures are massage and motion. If there is marked hamarthrosis,

puncture is done first. If there is no varus or valgus position and only a slight abnormal lateral mobility the knee is placed on a knee pillow but otherwise is left free. When lateral mobility is distinct a roll pillow is used. The roll pillow (a sort of splint pillow) is a closely stitched quilt 2 cm. thick which measures 60 by 60 cm. It is folded around the leg and fixed with 3 pieces of tape. In the Kommunehospitalet it is used frequently also in the treatment of cases of malleolar fracture and fracture of the shaft of the tibia. In such cases the leg strapped in the roll pillow is placed on a high hard stuffed triangular mattress so that the knee is kept in nearly rectangular flexion a position which is not uncomfortable. The use of this pillow makes it possible to institute treatment by massage and passive motion at once and allows easy inspection of the site of fracture at any time. In most cases it is sufficient for the correction of a varus or valgus position but sometimes these positions require additional side traction. Cases with more marked dislocation with or without shortening are treated by indirect longitudinal extension sometimes combined with lateral traction. Direct extension is not advisable as it gives rise to stretching of the ligaments around the knee which results in a greater tendency toward lateral mobility.

Operation is performed only in marked dislocation of uncondylar fractures. In bicondylar fractures the best results are obtained by conservative treatment. The patient is kept in bed for eight weeks at least and longer if a definite degree of lateral mobility

still remains. When he gets on the knee is usually made accustomed to carry the weight of the body.

Complete recovery without any operative intervention or clinically demonstrable defects of the knee in the knee with the exception of some minor changes resulted in 33 per cent of the cases treated in the Kommunehospitalet but in only 3 per cent of the Workmen's Compensation Board cases. As for capacity for work in 60 per cent of the former but only 20 per cent of the latter. The percentage of complete cure in one year was 89 per cent in the Kommunehospitalet cases and 31 per cent in the Workmen's Compensation Board cases. If patients more than sixty years of age are excluded it was 86 per cent in the former and 20 per cent in the latter.

The enormous difference in the results in the two groups cannot have been due entirely to possible differences of treatment. It must be accounted for in part at least by the hope of indemnity. This assumption is in agreement with the fact that most of the Kommunehospitalet patients who were longest in returning to work were those who were injured or entitled to compensation.

The prognosis is considerably better than was formerly supposed as of 126 patients reexamined 114 are completely able to work and of the 12 who are partly disabled several have taken up their old work again with merely some slight modifications. True secondary arthritis deformans was found in only 1 case.

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

**Jaussion H** Glycerin Chromate for the Sclerosis of Varicose Veins (*Glycérine chromée et sclérose des ecstasies* case) *P. 112 Méd. Par.* 1933 216 1061

Jaussion believes that when glycerin is used as a vehicle for some other substance such as phenol in the treatment of varicose veins it is the glycerin which produces the venous sclerosis. The only disadvantage of the use of glycerin is the production of hæmorrhage particularly into the kidney parenchyma. This may be prevented by the addition of chrome alum.

The formula for the sclerosing fluid used by the author is as follows:

Glycerine (double distilled)	5m.
Chrome alum	150
Distilled water	1 5 200

At each treatment from 5 to 20 cc. of this solution are injected forcibly. A tourniquet is used to distend the vein and prevent leakage of the solution. The injections are separated by an interval of eight days. Of 313 cases of varicose veins 232 were cured by 4 or fewer injections, 32 required 5 injections, 21 required 6 and the remainder required 7 or more.

The advantages of the glycerin chromate mixture are stated to be:

1. Freedom from slough after accidental extravasation of the solution.
2. The obliteration of extensive varices with few injections.
3. Absence of pain during the injection.

The author says that the occurrence of lumbar pain and vesical tenesmus (apparently indicating renal damage) is very rare and may be attributed to idiosyncrasy to the drug.

The injection of hæmorrhoid varicocle the bubo of lymphogranuloma inguinale and venereal warts is described. **HERMAN E. PEARSE, M.D.**

**Mahorner H R and Ochsner A** Leeches in Phlebitis to Prevent Pulmonary Embolism *J. N. S. 12* 1933 20 3405

Pulmonary embolism resulting from postoperative thrombophlebitis accounts for approximately 6 per cent of deaths after operation. The authors discuss briefly some of the measures that have been used to prevent or treat thrombophlebitis. They summarize the results from the use of leeches which have been recorded in fifteen articles published since 1922 and report the use of this form of therapy in four cases of spontaneous phlebitis.

In the first case reported by the authors the treatment was without effect probably because the

number of leeches was inadequate. In the three other cases it resulted in rapid abatement of the symptoms and apparently hastened recovery.

The authors outline the technique of the application of leeches and discuss the various theories with regard to the rationale of this treatment. They raise the question of the possibility of leech treatment or hirudinization in thrombo-angiitis obliterans and spontaneous thrombosis of the vessels supplying vital organs such as the brain and heart. They regard the use of leeches as the best available method of treating phlebitis early and thereby diminishing the dangers of pulmonary embolism. However they state that the routine application of a small number of leeches after operation as prophylaxis against thrombophlebitis does not appear to be effective. **W. J. MERRITT SCOTT, M.D.**

**Perazzo G** The Vascular Gangrenes of the Upper Limbs from Cervical Ribs (*Le gangre scapulo-humérale due aux côtes cervicales*) *Ch. d'op. 10* 1933 270 1

The author reviews the classification and the embryological development of cervical ribs. To the twenty-four cases of vascular gangrene of the hand or arm which he was able to find in the literature he adds a case of his own that of a thirty-nine-year-old woman with cyanosis and gangrene of the left arm below the elbow. In this case no radial or ulnar pulsations were found. X-ray examination disclosed bilateral cervical ribs, the left much larger than the right. The arm was amputated in the middle third. The lumen of the humeral artery was found diminished by thrombus but the intima and elastic fibers were not affected. The media was infiltrated with fat granules. The nerves were undergoing a descending wallerian degeneration. Perazzo believes that both the mechanical and neurosympathetic factors contributed to the production of the gangrene. **P. F. MERRITT, M.D.**

**Trauma Rao G** The Behavior and Pathogen Importance of the Blood Platelets in Thrombophlebitis (*Il comportamento e l'importanza patologica delle piastrine nella trombosi*) *R. 11 d'g. e 933* 20 83

The author believes that there are bacterial and non-bacterial types of thrombophlebitis, the latter constituting particularly the postoperative types occurring in the absence of infection. He determining the platelet count before and after operation in fifty gynecological cases he found that in cases in which thrombophlebitis ensued there was a preoperative increase in the platelets. The only exception was a case in which though the count was normal before the operation there was a co-existing

infection. In cases of puerperal thrombophlebitis he found the same parallelism. He believes that a high platelet count is a factor predisposing to aseptic thrombophlebitis. He therefore advocates a routine pre-operative platelet count to determine the danger of this complication.

The use of leeches was found to be the prophylactic procedure to influence the thrombocytosis and the best form of treatment in the early stages of aseptic thrombophlebitis. P. F. MINIM M.D.

Rabinowitz, H. M. Newer Concepts on the Pathology and Treatment of Thrombo Angiitis Obliterans. *Ann J S S* 1932 xxi 260

Because of the importance of certain phospholipid in the coagulation of blood it occurred to the author that changes in the metabolism of this group might be associated with the thrombotic tendency in thrombo angitis obliterans. In the cases of twenty five normal males he found that the lecithin (phosphorus) of the whole blood ranged from 8 to 11.8 mgm per 100 ccm and the morning urine was negative for choline whereas in fifty cases of thrombo angitis obliterans the lecithin in the whole blood ranged from 7 to 15 mgm per 100 ccm and in thirty of these fifty the morning urine was strongly positive for choline on one or more occasions. Eighty six per cent of the patients with thrombo angitis obliterans showed at least once a blood lecithin above the highest value determined for the twenty five normal controls. In these patients the excretion of choline in the urine seemed to be associated with the lower or normal values of blood lecithin and as frequently absent when the lecithin level was high. The author concluded that an increased metabolism of lecithin results in an increase in the choline in the blood and consequently in the excretion of choline in the urine.

On the basis of the assumption that the choline derivatives supposedly formed in excess from lecithin in the body might be the deleterious agents in thrombo angitis obliterans Rabinowitz treated cases of thrombo angitis obliterans by reducing the lecithin content of the diet and administering cholesterol a physiological antagonist of lecithin. Cholesterol injected intramuscularly appeared to diminish the pain but did not have a favorable influence on the thrombotic tendency. After much experimenting choline and its derivatives are found to be easily converted by a treated sulphur into non-toxic compounds. Therefore in cases treated later activated sulphur was injected intravenously for two months. In addition lecithin rich foods were excluded from the diet. Under this regime the pain rapidly subsided and trophic lesions promptly improved. In late cases however the rubor was not lost. The last symptom to disappear was laudicant. In the advanced gangrenous stages the results were unusually favorable healing being obtained after minimal loss of tissue. The author reports the cases of three young men who retained good functional stumps at the metatarsal

phalangeal junctions. When arteriosclerotic changes were associated with thrombo angitis obliterans the prognosis was not good. In four such cases high amputation was necessary.

W. J. MERLE SCOTT M.D.

Danzon, M. Arterial Embolectomy. *ib S S* 1933 xc i 49 422

The literature of arterial embolism is very extensively reviewed and the etiology, prognosis and treatment of the condition are discussed. Considerable space is devoted to the difficulty of evaluating results.

The author has collected 120 cases of arterial embolism. One hundred and nineteen were operated upon (4 by Danzon). The results were much better in these than in the 60 cases in which operation was not performed.

It is pointed out that in a high percentage of the cases there is severe cardiac damage. Of the cases reviewed cardiac damage is present in 60 per cent. Twenty six per cent of the patients suffered from such conditions as arteriosclerosis, diabetes, syphilis and thyrotoxicosis. It is particularly important to recognize the fact that arterial embolism is not an uncommon complication of thyroid disease.

The high death rate in this group of cases is due undoubtedly not to surgical treatment but to the underlying severe cardiac damage or peripheral vascular disease.

The author describes his operative procedure which is based primarily on the work of Carrel. However, he uses a 2 per cent sodium citrate solution instead of oil to prevent clotting. He prefers local anesthesia for the operation. If this is impossible he employs spinal anesthesia.

The article includes abstracts of the 100 case reports. A study of these cases shows very clearly that the condition is usually not recognized or operated upon sufficiently early. The author stresses the importance of teaching the medical profession that the results of operation are dependent directly upon the time which elapses between the occurrence of the embolism and the operation. Although in some cases of embolism of the large arteries recovery may occur spontaneously, it has been definitely proved that the results are much better when surgical treatment is given provided the operation is performed early.

M. S. K. I. to M.D.

## BLOOD TRANSFUSION

Gejncs, S. Observation on Blood Transfusion in Surgical Practice. (Bebach, N. n. eber die Bl. transf. der chirurg. heil. Pa. s.) *Ek Z A* 1932 x p. 93 7

His article is based on the conviction that blood transfusion is not employed sufficiently often in the Soviet Union and that propaganda on the part of the government is necessary. Particularly in comparison with statistics of American surgeons who are cited the total of 4,000 blood transfusions in



eleven years in the entire Soviet Union seems very small. The author reports on 180 blood transfusions in the cases of 138 patients. The quantity of blood transfused varied from 200 to 1000 c.c.m. and averaged about 600 c.c.m. For blood grouping 3 standard sera O, A and B were used. No error occurred in a period of four years. Brief directions for preparing such standard sera are given. Oetflecker's method of transfusion was used 3 times and the citrate method 1 time. The technique which is described in detail contains nothing new. For the systematic use of transfusion the organization of donors is an important prerequisite. Several donors have given blood as often as 12 times in one year. It is noteworthy that the donors were given such certificates in only exceptional cases. Regeneration is supposed to be accelerated by working and requires thirty-five days. The author urges that the State provide means for the donors.

Blood transfusion was employed for acute and chronic hemorrhage postoperative shock, cholera and suppurative septic processes and for prophy-laxis before serious operations. The hemorrhages were chiefly gastric hemorrhages, particularly postoperative gastric hemorrhages. Transfusions were given also before operation. In addition to blood replacement transfusion has a hemostatic action. However, in hemorrhagic diatheses the result of transfusion is not very satisfactory. Patients with posthemorrhagic anemia recovered relatively rapidly after transfusion. Blood transfusion is of great value in postoperative shock, even when the shock is not due to hemorrhage. In 27 cases of shock, some of which were very severe, only 1 patient could not be saved. Blood transfusion is considered the most effective and reliable measure for combating the fall in blood pressure, the capillary stasis and the acidosis which must be overcome in shock. Seven hundred cubic centimeters of blood must be given. Smaller quantities are ineffective. In the cases of choleraemic patients preoperative transfusion is of great value for hemostasis. The importance of prophylactic transfusion before serious operations, especially laparotomies, is manifested by the lower mortality in cases in which such transfusion are given. A particularly extensive experience with gastric resection is presented. Some of the literature concerning the effects of transfusion in septic diseases is still very contradictory. The author reports 6 cases of chronic septicopyemia in which blood transfusion resulted in immediate and striking improvement. In cases of acute septic processes no improvement was noted. GUTTER, K. F. SCHULTZ (C)

Balachowsky, S., Guenzburg, F., Palczna, T., Rzechina, S. and Farberow, R.: The Preservation of Blood for Transfusion (Konservierung von Blut zwecks Transfusion deselben). *Severnyy per. izvestiya* 1933, 13, 15.

Extensive laboratory studies were made to solve various problems associated with the preservation of blood.

The first part of this article deals with the development of methods of preservation. The study of the beginning stages of coagulation of citrated blood led to the conclusion that even large amounts of citrate (as much as 6 per cent of the total quantity of blood) did not prevent partial coagulation. Further investigation showed that maximal preservation and prevention of coagulation were obtained by the simple dilution of citrated blood with physiological salt solution. It was found that the more the blood was diluted the longer it could be preserved. Twenty-eight experiments carried out with blood diluted to the ratio of 1:4 were very satisfactory.

In the second part of the report the changes in the blood from citration and dilution (1:4) are discussed. The resistance of the erythrocytes in the blood of dogs was scarcely altered during the first two or three days of preservation, but gradually diminished when the blood was kept for a longer period. The variations in the residual non protein nitrogen and in refraction were insignificant and the rate of sedimentation in the course of one and three hours varied but slightly with the duration of preservation. Catalysis showed only slight changes. Active glycolysis occurred in the diluted preserved blood. The content of inorganic phosphorus rose somewhat, and the sugar content fell. No definite increase in uric acid could be demonstrated. A loss in the ability to fix oxygen was noted in the erythrocytes of preserved blood.

The third part of the report deals with the reactions of the organism to the transfusion of preserved blood. The sugar and chloride contents of the blood and the rate of sedimentation of the erythrocytes were determined before the transfusion and twenty minutes and one hour after the transfusion. The results did not permit definite conclusions.

The authors describe in detail their methods of preparing, keeping and transfusing preserved blood. The blood is drawn into a sterile vessel and combined with an equal amount of a mixture consisting of one part of 4 per cent sodium-citrate solution and nine parts of physiological salt solution. The mixture is kept at a temperature of +4 degrees. The authors believe that the results depend entirely upon careful preservation of asepsis and absolute purity of the reagents. A. FLEISCH (Z)

Bel, G.: Complications During and After Blood Transfusion. *Klinicheskiy vestnik* 1933, 13, 15.

On the basis of about 100 blood transfusions the frequency of complications and prevention of complications are discussed. In the comparison of 908 transfusions with citrated blood and 1000 physiological salt solution, 10 per cent of complications were noted. In the comparison of 1000 transfusions with physiological salt solution and 1000 transfusions with citrated blood, 10 per cent of complications were noted. In the course of the study the total quantity of citrate was always below the toxic dose (1:1000). The author also mentions pathological

reaction was considerably lower when the citrate method was employed. In each series of cases there was 1 death.

Of most importance in the prevention of complications is careful selection of the donor. The donor must be free from transferable disease. Group similarity is desirable but universal donors may be used. The determination of the group must be made carefully. The details of the technique are discussed. Control tests should be carried out. Even with group compatibility and a favorable outcome of the control tests biological incompatibility of the blood is sometimes found. The cause of the resulting hæmolysis is not known (disturbances of colloidal equilibrium? Leucotoxins?). To prevent it Oehlckers biological preliminary test (the injection of about 10 c.cm. of the donor's blood before the main transfusion) is indispensable.

The reaction to the blood transfusion depends also to a great extent on the disease present. In severe

blood disease hæmophilia, pernicious anæmia and sepsis severe complications develop more frequently and the quantities of blood transfused must not be too large. In acute anæmias on the other hand large amounts of blood are well tolerated after sudden hæmorrhages. The grave complications—chills, circulatory collapse, unconsciousness, hæmoglobinuria and anuria—always develop immediately after the transfusion. The delayed reaction, such as erythema, urticaria, œdema and a slight rise in the temperature, are almost always benign. The mortality of blood transfusion ranges from 0.03 to 0.46 per cent.

Blood transfusion should be undertaken only on specific indications. If these are established complications may be prevented if their nature and possibilities are known. In no case should this important therapeutic measure be rejected when proper treatment will prevent complications.

SCHWALM (G)

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Semb C. and Berg A. Res Arches on Blood Pressure After Abdominal Operations *Ann Surg* 1933 LXIII Supp xxv

The behavior of the blood pressure after abdominal operations was investigated by daily measurements of the day pressure (presumptive maximum in the waking state) and the night pressure (presumptive minimum during sleep).

In studies of the day pressure made in the cases of 134 patients and including about 2500 measurements it was found that about 33 per cent of the patients showed a relatively unchanged pressure curve about 60 per cent a primary rise in the pressure during the first days after the operation and about 6 per cent a primary fall. Some of them showed a secondary reactive fall after the primary rise and then a secondary rise. Altogether a fall below the normal occurred in only about 20 per cent of the cases.

The blood pressure during sleep which was determined by about 300 measurements in the cases of 45 patients showed in every case a rise above the normal in the first days after the operation. Therefore the normal fall in the night pressure failed in more or less degree to occur.

The relation between the day pressure and night pressure was therefore pathologically altered the difference between these pressures becoming smaller or disappearing altogether. The curve for day and night pressures combined represent the total blood pressure reaction which has a relatively hysteresis form. The total blood pressure reaction coincides in time fairly well with the clinical postoperative reaction.

The cases without complications beforehand showed the greatest tendency toward a rise in the night pressure and the complicated cases a greater tendency toward a fall in the day pressure after the operation.

The total blood pressure reaction showed some relation to postoperative intestinal disturbances. A rise in blood pressure especially in the night pressure occurred more or less parallel with impairment of intestinal function. A similar reaction was observed also in case of mechanical ileus and peritonitis intestinal paralysis. The relation to other postoperative complications is also discussed.

The blood pressure conditions noted can be compared in some degree to the changes which Müller found in hypertension and cardiac insufficiency. They are regarded as an expression of a circulatory incoordination, a circulatory disturbance (perhaps in the postoperative period).

The author assumes the cause to be vasomotor influences especially venous stasis in the splanchnic circulation especially in the planchnic circulation.

Fine J. and Levenson W. S. The Effect of Foods on Postoperative Distention *Ann Surg* 1931 LXII 84

From experimental observations the authors conclude that in the absence of food the only important cause of gaseous distention of the intestine is swallowed air. They believe this to be true even when the circulation of the intestine is severely injured. Their experiments show that liquid carbohydrates are a particularly important source of distending gases. The food which are most prone to cause severe distention are orange juice, ginger ale, milk and foods rich in cellulose.

With regard to the treatment of distention the authors state that the necessity of administering liquids and carbohydrates in the immediate postoperative period can be met by the parenteral administration of glucose solutions. For the stimulation of peristalsis they advise the use of emulsified or solid food such as toast, cooked cereal, and albumen.

JOHN H. GARLOCK, M.D.

## ANTISEPTIC SURGERY TREATMENT OF WOUNDS AND INFECTIONS

Pearl F. L. Electric Shock: Presentation of Cases and a Review of the Literature *JAMA* 1933 LXII 2

It is probable that in the case of the higher animals death from electric shock is due as a rule to primary fibrillation of the ventricle. In man this conclusion is hopeless unless prompt and heroic treatment is instituted. Postmortem findings fail to explain death from electricity. Changes in the wall of the ventricle are noteworthy. Most of the pathological changes are probably due to heat rather than electrolysis.

The treatment of electrically induced failure of the respiratory center is artificial respiration by the prone pressure method until breathing is reestablished or death is certain. The treatment of electrically induced ventricular fibrillation is prompt cardiac massage preceded if possible by the intra-ventricular injection of potassium salts followed by calcium salt. In some cases the carotid administration of the salt may prove sufficient without the use of cardiac massage. If available an appropriate current may be passed through the heart followed by cardiac massage. The value of prolonged artificial respiration as a life-saving measure in unconscious cases followed by the electric current seems to have been estimated at 25 per cent of cases.

even collected cases death occurred despite its use under ideal conditions over long period of time. Stimulating hypodermic inhalations of pure oxygen and countershock are not advised. Inhalation of carbogen is a valuable aid to artificial respiration. In certain cases lumbar puncture has a definite place in the treatment. Electric burns may be treated by radiant and ultraviolet irradiation. In severe burns the use of ointments and dusting powders is not advisable. In a few cases immediate debridement and skin grafting have been successful. Surgery should be employed with caution.

The sequelae of electric shock are many and varied. The most important affect the skeletal and nervous system.

JOHN H. G. ROCK, M.D.

### ANÆSTHESIA

Moerl F. Death in Evipan Narcosis (Todesfall bei Evipan Narkose) Z. allg. Chir. 1933 p. 877

Evipan sodium is of value not only because it is rapidly broken down in the body and has only a slight affinity for the vital centers of the medulla but also because it has wide therapeutic uses. In experiments on animals the lethal dose is from three to four times the therapeutic dose. Nevertheless serious symptoms and deaths following the use of the drug are being reported (Baucker, Reschke, Petermann, Doederlein and Joseph). All such sequelae should be studied in order that the contra-indications to evipan sodium may be determined and its dangers eliminated.

The author reports a sudden death under evipan narcosis which occurred with symptoms of cardiac paralysis. The patient was a man, twenty-five years of age, who presented the typical syndrome of advanced senile atherosclerosis. He was also suffering from pulmonary emphysema, mild diabetes and hepatic cirrhosis, but Moerl regards these complications as of little importance in the effects of the anæsthetic as the death was definitely a cardiac death. He emphasizes that in the case of patients with severe circulatory disturbances, especially circulatory disturbances of a toxic nature, great care is necessary in the use of evipan sodium.

In the case of a person with a body weight of 90 kgm. 0.09 ccm of evipan per kilogram (a total of 8 ccm) according to the recommendations of (Specht) was injected without a preliminary narcotic. Sleep was induced immediately. Three minutes later death threatened suddenly. Ten cubic centimeters of coramin and 3 ccm of lobelin were given intravenously at once but after a few seconds respiration and the heart stopped. Artificial respiration and the intracardiac administration of 0.5 ccm of caffeine and adrenalin were without effect. At autopsy, a thrombosis and fat embolism were excluded. The internal organs showed the changes of advanced atherosclerosis. Although the amount of evipan injected was 2 ccm less than that recommended by the manufacturer of the drug, the dose was too large for this particular patient.

In conclusion the author says that the doses recommended by Specht usually produce a too protracted and often undesirably deep narcosis instead of a rauch or brief narcosis and are too large for old and debilitated patients. The difficulties in the dosage are the same as those in the use of avertin. The deciding factor with regard to the dose to be employed in a given case seems to be the experience of the anæsthetist.

ERICH HENDEL (Z)

Gyllensvard N. Experimental and Clinical Studies on Avertin Anæsthesia (Experimentell und klinisch Studien über Avertinnarkose) Acta Chir. Scand. 1933 I Supp. x

The author calls attention to the shortcomings of the Endrejat and the Beck and Lendle modifications of the Sebeling method of determining inactivated avertin. As these procedures require from 10 to 20 ccm of blood and 10 gm of organic mass they are inapplicable to children and small animals. Moreover the accuracy of the analysis is impaired by the fact that the empty titre values vary. The methods are very expensive because large amounts of tissue are required for extraction of the avertin. In the method proposed by the author, which is based on estimation of the bromine contained in the avertin, 1 or 2 ccm of blood are sufficient for blood analysis during the anæsthesia.

It was found that during rectal anæsthesia in animals the avertin content of the blood has a certain relationship to reflex activity. Hence it is possible in the cases of some types of animal to determine the depth of anæsthesia corresponding to a certain blood concentration within fairly close limits. As the avertin reaches a more or less definite concentration balance at a time corresponding to a certain depth of anæsthesia, the avertin content of the blood shows varying values which are characteristic of different types of animals. After a constant concentration balance has been reached the avertin content in all of these animals is the same at a certain depth of anæsthesia.

To determine the concentration of avertin which is most suitable for anæsthesia the author induced anæsthesia with like doses of avertin in different concentrations under identical conditions in the same animal and determined the blood concentration curve and the depth of the anæsthesia. In rabbits, dogs and cats a 3 per cent solution given by rectum induced the most rapid and uniform anæsthesia with less variation and a flatter course of the blood concentration curve than 1 and 2 per cent solutions. In man the conditions are about analogous to those in rabbits. The author recommends that in clinical cases a 3 per cent solution be administered slowly and at a low pressure with the patient in the right lateral position. If the narcotic effect is insufficient the resorption surface may be increased by changing the patient's position.

With regard to the question of the site of detoxication of avertin, the author states that it is possible to follow the changes in avertin concentration in

directly by determining the blood concentration curve of avertin. This shows a characteristic course for each type of animal. When large doses are used the curves are less uniform than when small doses are used because the blood concentration is influenced by various factors such as resorption, the rapidity of the circulation and respiration and the diffusion power which vary markedly in deep anaesthesia. Analysis of the elimination curves shows that the fall of concentration in the blood is always proportional to the blood concentration. At the beginning of anaesthesia the avertin is stored in the fats and lipoids of the body but later is returned to the blood making the blood concentration curves flatter in the later course of the anaesthesia. Consequently the anaesthesia varies in obese and emaciated individuals being shorter in the former.

With regard to intravenous drop anaesthesia the author concludes that this is inapplicable to man not only because of the poor detoxication power of man but also because large amounts of avertin are stored in the fatty tissues and released into the blood later making the anaesthesia unduly deep or prolonged.

The entire amount of avertin leaves the body in the urine within forty eight hours after the anaesthesia in the form of paired glycuronic acid. The ratio between the avertin concentration in the blood and in the brain is about 1:5. The content in the liver and kidneys is about the same as that in the brain and the content in the musculature is about

the same as that in the blood. The fatty tissues and the vagus nerve have a much greater content of avertin than the blood. In man the avertin content in the fat from two to four hours after an intravenous infusion is much greater than the content in the blood and musculature. The avertin content of the blood cells and plasma is about the same.

In children in good general condition the maximum blood concentration is reached about thirty minutes after the termination of the intravenous infusion. Therefore operation should be delayed for that length of time in order to avoid the necessity of giving additional anaesthetic. The resorption power is possibly poorer in children than in adults hence children require larger doses.

In individual cases it is very difficult to determine whether observed respiratory disturbances (asphyxia) are of central or mechanical origin. On the basis of results obtained in experiments on animals the author warns against underestimating the danger of mechanically produced asphyxia. Prevention of this type of asphyxia requires constant control of the respiratory passages during the induction of the anaesthesia and possibly the introduction of a Mayo tube. The lighting of the room should be sufficient for the easy recognition of cyanosis. The cause of the asphyxia may be not a centrally produced respiratory disturbance but a mechanical occlusion of the respiratory passages without the picture of choking.

LOUIS NEWZEL M.D.

# PHYSICO-CHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Kiesel M. The Effect of the Roentgen Rays on the Metabolism of Cholesterolin and Its Correction by the Oral Administration of Lipoids (Die Wirkung des Roentgen Lichtes auf den Cholesterinstoffwechsel und die Ausgleiche durch perorale Lipoidzufuhr) *St. Klinische wochenschrift* 1933 21: 311

There is a large amount of literature on roentgen sickness and its dependence on the metabolism of cholesterolin. In all cases in which the liver is directly in or near the field of irradiation general symptoms will be produced by the increased mobilization of cholesterolin.

The author reports studies of the cholesterolin content of the blood of animal and man which were made before and after intensive roentgen irradiation with and without the administration of therapeutic doses of lipoids. Phosphorus determinations were made at the same time as there seems to be an antagonistic relationship between cholesterolin and phosphorus. The technique of the experiments is described in great detail.

In animals a decrease in the cholesterolin following irradiation could be determined with absolute certainty but there was nothing characteristic about the behavior of the phosphorus. The results following the administration of cholesterolin in the form of colist tablets were negative. It was only when cholesterolin dissolved in oil was given that the figures for cholesterolin remained the same or showed an increase soon after the irradiation.

The studies on human beings were made chiefly on women who were being irradiated for cancer. Six hours after exposure to the rays there was a marked change in the level of the cholesterolin followed by an attack of roentgen sickness. After twenty-four hours a marked decrease of the cholesterolin was evident. Successful results from the administration of cholesterolin depended upon the time at which the cholesterolin was given. When colist tablets were administered simultaneously with the irradiation the cholesterolin curve did not sink and the incidence of roentgen sickness was reduced to the minimum.

KESSEL (G)

Caffier P. Irradiation of the Ovaries and Hereditary Injury as a Histological Problem (Zur histologischen Untersuchung und Forderung der Wirkung der Röntgenstrahlung auf die Eierstöcke) *Archiv für Gynäkologie und Geburtshilfe* 1933 135: 25

On the basis of experiences with *Drosophila* megalogaster and some other insects and plants students of heredity have been claiming practical consequences from irradiation of the ovaries in the female of the human species and have been demanding that the practice of temporary sterilization be abandoned. As a result the *Drosophila* material has

been studied more closely by others besides students of genetics. The following are notable facts have been revealed:

1. Mutations after irradiation are much more frequent in males than in females.

2. A rapid fall in the mutation rate occurs when the opportunity for copulation is given to the insect.

These facts have been cited as reducing the danger of injury to the germ in the case of the human female. Students of heredity reject this theory pointing out that in woman all of the ova are struck by the ray as ova whereas in the *Drosophila* there is a continuous formation of new ova. It was therefore necessary to determine whether this rejection is justified.

The first question asked was whether a certain kind of cell has a specific radio sensitivity. The negative answer is based on the similar structure of all kinds of cells. The difference in the degree of effect is attributed to the growth potency of the tissue under consideration. Newer evidence in support of this theory has been obtained from experiments *in vitro*. A culture with a high rate of speed of proliferation reacts readily its growth being therefore rapidly checked by irradiation. The effect can be increased by repeated transference of the culture to fresh media. Apparently the mitosis is the chief factor determining the irradiation injury. Experiments by Kemp and Juul have shown that in irradiated cultures absence of new prophase is noted at first i.e. that at first no new cells divide after the irradiation. Accordingly the cells ready for division rather than the cells in the act of dividing are in a certain sense the most delicate reagents. When this knowledge is applied to the problem of the sex cells it is not surprising that mature sex cells are so particularly radiosensitive.

In recent times the relationship between radio sensitivity and metabolism has been much discussed. It is still an open question whether metabolic processes take place in the cell nucleus or in the cell body. Irradiation experiments carried out by Philipp on lower animals throw particular light on the importance of the cell body. The more fluid the cell contents the more sensitive is the cell to irradiation. However, the transition from a viscous fluid to a thin fluid phase is a necessary preliminary to cell division and possibly causes cell division. It is perhaps here that we must seek for the factor determining radiosensitivity. All mature sex products are ready for division i.e. they have all completed the change of phase and consequently are all at the maximum of radiosensitivity.

After presenting these theories Caffier reviews separately the histology of the *Drosophila* testis, the mammalian testis, the *Drosophila* ovary and the

human ovary and points out that in the human ovary in contrast to the three other organs in which the development of the sex products takes place from beginning to end in the testis or ovary there is absolute rest instead of rapid division. All the cells of the ovum with the exception of one mature and a few maturing cells are fully developed up to the maturation process. Consequently there exist as regards the vital processes of these cells a permanence of rest a state far removed from processes of division a minimum of metabolic processes. Experiments have shown that from this slight readiness to react there results slight readiness to receive injury. The immature cells of the ovum may be compared in a sense to a culture from which rapid proliferation is absent.

In connection with these investigations of Lincus experiments to solve the problem of the different behavior of mature and immature ova in the mammal were made. They showed that mature in contrast to immature rabbit ova possess such a high grade of readiness to react that even without the specific stimulation of union with the partner cell they can be induced to show cell division. Immature ova on the contrary do not develop in any way under the stimulation of implantation.

If in the search for an explanation of irradiation injury one goes back to the difference in the behavior of mature and immature sex products the difference in the mutation percentage after irradiation of *Drosophila* males and females is explainable. The number of mature female sex products at any time is small even in *Drosophila* whereas the number of male sex products is enormously large.

Another factor against danger of race injury from irradiation of the ovary in the human species is the large number of chromosomes. The importance of this factor was evidenced by the results of Stadler's experiments on plants which showed a decrease of mutations and an increase in the number of chromosomes after irradiation.

There is no reason why for spontaneous mutations also the same point of time (namely the moment of maturation of the sex products) should not be assumed for the occurrence of the effect since spontaneous does not signify absence of injury but injury from an unknown cause. Radio-activity is only one among the many possible causes of injury. Recent experiments with *Drosophila* show that difference in temperature is a comparable cause of injury.

The interest in the problem is explained by the practical application of the scientific conclusions that is being demanded of the medical profession. Heretofore this has concerned only roentgen activity. Diathermy must soon be drawn into the inquiry. The previously purely imaginary danger of injury to the germ from roentgen irradiation in mammals prompted the author to collect the material for this article to show that the exonerative factors can not be regarded as details but possess a basic importance. No doubt is cast on the statements made by

investigators in the science of heredity but the possibility of a histological explanation of the observed phenomena is pointed out. CARTIER (G)

Russ S and Scott G M Variations in the Response of Tumors to Sublethal and Lethal Doses of X Ray. *Br J J Rad* 1933 2 451

The authors report experiments carried out to determine the effect of various doses of roentgen rays upon tumors of a strain of Sarcoma F 16 in rats. The variable factors are described and the results obtained are shown by graphs and compared with the rate of growth of a typical control group of tumors under normal conditions. The following conclusions are drawn:

1. The way in which tumors will respond cannot be accurately predicted from the dose of roentgen rays given unless the dose is very large.

2. After a moderate amount of irradiation there is always some slowing up of the rate of tumor growth. If the tumor remains stationary for some weeks and does not diminish in size it will probably grow eventually. Tumors which are going to disappear as the result of irradiation generally show some reduction in size soon after the exposure.

3. The reaction of tumors to a given dose of irradiation shows a definite variation the cause of which is unknown.

4. There is considerable evidence to show that the absorption of irradiated tumor cells is able not only to immunize a susceptible rat to subsequent inoculation of that particular tumor but also to retard the growth of an established tumor. When irradiated tumor tissue is used to immunize a number of rats against subsequent inoculation there will always be a few cases in which the immunizing dose appears to have practically no effect regardless of the attention paid to technical detail. Why some of the rats fail to react to the immunizing dose is not known. In the experiments reported two tumors given the same dose of irradiation reacted differently.

5. So far as they go the experiments reported in this article show that the interval between doses of roentgen rays is of paramount importance in determining the subsequent fate of the tumor cells and that the size and rate of growth of the tumor at the time of the roentgen ray exposure has apparently an important bearing on the final result.

ADOLPH HARTUNG, M.D.

## RADIUM

Spear F G and Grinnett L G The Biological Response to Gamma Rays of Radium. *Am J Function of the Intensity of Radiation* *Phys J* *Rad* 1933 357

The 4 gm. apparatus was used in experiments to determine its variation in the biological effectiveness of gamma irradiation with variations in intensity. Tissue cultures were exposed to irradiation and computations made of the effect on cell division. The cultures were exposed for varying lengths of time.

The material consisted of the choroid and sclerotic coats of fowl embryos grown in fowl plasma and chicken extract. Tests of the tissue cultures made beforehand demonstrated that mature preparations reached an average figure of mitosis which remained constant for about twenty hours. Because of this constancy counting of the mitoses per culture is a convenient method of obtaining a quantitative measurement of the effects of physical agents upon cell division. Hanging drop cultures were used approximately twenty four hours after the second subcultivation. Three and six tenths grams of radium were employed in the form of eighteen tubes of monel metal each 1.46 mm long and 4.6 mm in diameter having a wall thickness of 0.3 mm and containing 200 mgm. of radium element. The tubes were placed on end with the long axis vertical and arranged in a horizontal circle by means of a wooden disk. The diameter of the circle was 8.4 cm. A brass plate 2.0 cm. thick was placed between the radium and the culture to absorb all primary beta irradiation. The apparatus is shown by diagrams.

An attempt to determine intensity by ionization methods having proved unsuccessful calculation of intensity values was lone. The intensity unit adopted was that of Sievert namely 1 mgm. of radium at a source point acting at a distance of 1 cm. and filtered by 0.5 mm. of platinum.

Six experiments were performed with varying intensities obtained by varying the distance between the radium and the culture. The object of the experiments was to determine the effect of gamma rays from 3.6 gm. of radium upon cell division in tissue cultures *in vitro* and to compare the results when different intensities were used. Two sets of cultures were employed one exposed to irradiation at room temperature and the other unexposed. Before being

fixed and stained both sets were placed in the incubator for eighty minutes. The eighty minute interval is explained as the latent period.

In Experiment 1 a distance of 5.92 cm. an intensity in Sievert units of 62.2 and a screen of 1.3 mm. of platinum equivalent were used. In other experiments other distances and intensities were employed. The complete data of one series of experiments are shown in tables and the results with the various intensities are shown by tables and curves. The results seem to confirm other observations of the effects of irradiation on tissue cultures namely (1) that with a given intensity of gamma rays a gradual increase in the exposure leads to a progressive fall in the number of cells in division seen in the cultures eighty minutes after irradiation and (2) that with a given duration of exposure an increase in intensity causes an increase in the proportion of cell affected by the irradiation. From the results it is possible to obtain a table which shows the dose required at each intensity to produce a given percentage of fall in cell division.

The experiments confirmed the theory that the biological efficiency of irradiation may depend upon the rate at which the energy is absorbed that is that the biological effect may be a function of the intensity of the irradiation. Therefore it is concluded that as far as the experiments have gone they suggest that the observed difference in biological efficiency can be attributed to the intensity of the irradiation alone. The biological effect increases with an increase of intensity up to a certain critical value. Beyond this point the irradiation required to produce a certain given effect remains practically constant. The experiments were interrupted by the dismantling of the 3.6 gm. apparatus.

A. J. MESERLIN, M.D.



## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Collens W S and Boss L C Absorption of Dextrose by Rectum *Arch Int Med* 1933 43 37

In the cases of twenty four non-diabetic and seven diabetic fasting patients from 20 to 100 gm of dextrose in various concentrations were administered rectally one hour after a cleansing enema. Two hours later a 50-cc enema was given and the evacuation tested for sugar. Blood sugar determinations were made before the administration of the glucose and half an hour and one and two hours afterward.

In the non diabetic groups an increase in the blood sugar of from 16 to 25 per cent was found and the amount of dextrose recovered varied between 10 and 25 per cent. In the diabetic group the findings were similar except in the cases of two patients who showed no rise in the blood sugar and one patient who showed a 50 per cent drop. All presented evidence of the rectal absorption of glucose.

The authors conclude that dextrose is absorbed when it is given by rectum and that the amount absorbed is sufficient to warrant recognition of the administration of dextrose by rectum as a therapeutic procedure of value.

WALTER H. NADLER, M.D.

André-Thomas A Tumors Comparable to Gliomata Formed in the Muscles of the Thigh Following Trauma (Tumeurs comparables à des tumeurs gliomiques décloppées des muscles de la cuisse à la suite d'un traumatisme) *Ann d'ot p th* 1933 2 657

The author reports the case of a man aged twenty seven years who consulted him in October 1930 on account of constant severe pain on the inner side of the left thigh at the junction of the middle and upper thirds and over the upper border of the internal condyle of the left femur. Pressure on these areas caused great pain and walking and mounting stairs aggravated the symptoms. The thigh was atrophic and the left leg colder than the right but there was no definite evidence of a peripheral nerve lesion.

In June 1928 the patient had traumatized the inner side of the left thigh in falling off a bicycle. The atrophy and pain began eighteen months later. At operation under local anesthesia a mass the size of an almond was found in the superficial fibers of the vastus internus muscle. The tumor was very painful when touched slightly adherent to the muscle fibers and attached at its proximal end to a small cord like structure which appeared to be a nerve filament. On section it presented a surface of cicatricial tissue with a hemorrhagic grayish core. Histological study

revealed an irregular mass of round and polyhedral cells buried in connective tissue which lacked definite walls and was surrounded by a large amount of collagen. Mitotic figures were few.

After removal of the tumor the pain in the upper thigh ceased but the pain over the internal condyle of the femur persisted.

At operation in the latter area performed in May 1931 a nodular tumor the size of a pea was found in the muscle.

The spontaneous and provoked pains suggest that the neoplasms were peripheral neurofibroma or neuroma but histological examination ruled out this diagnosis. Roussy and Oberlin who studied the sections were struck by the resemblance of the tumors to the arterial angioneuromata described by Mas on.

The fact that the first tumor was embedded in cicatricial tissues suggested a traumatic origin.

On account of their low growth and small size and the scarcity of mitoses the neoplasms are believed to be benign.

Removal of the tumors in the author's case was followed by complete relief of the pain and the return of function.

KELLOGG S. and M.D.

Taylor A C and Moore E Multiple Hamangiomas Showing Certain Malignant Characteristics in an Infant *Am J Cb or* 1933 27 31

The occurrence of multiple hamangiomas in several organs is not uncommon. Such tumors occur most frequently in adults very few are found in children. The authors report the case of three-month-old female infant with multiple hamangiomas in the skin liver and lungs. The tumors differed in certain characteristics. In the liver they showed a distinct tendency to invade the host tissue whereas in the skin and lungs invasive activity was much less marked or almost entirely lacking. The difference in the behavior of the angiomata in the liver may possibly have been due to lesser resistance of the soft liver tissue to the invasive activity of the tumor elements. It is conceivable also that the liver tissue may have exerted a stronger attraction to the endothelial cells of the tumor tissue than the lungs and skin tissue. While in the skin and the lungs the tumor cells formed mainly typical capillaries and only relatively seldom more solid strands of tumor cells formations of the latter type were found quite commonly in the liver where the endothelial cells in many places pushed their way into the lumina of the vessels forming irregular cell strands. They were growing also as more solid strands outside the capillaries indicating a tendency toward increased motor activity which may have been related to their tendency to invade the surrounding tissue.

In other words some of the tumors had assumed properties which are considered characteristic of malignant growth but in other respects such as proliferative activity and cytoplasmic and nuclear structure their characteristics were those of benign growths.

While it is possible that in this case as in some of the previous cases in which angiomatous nodules were found in the lung the lung nodules were metastases from nodules in the liver it is possible also that they were primary pulmonary tumors due to factors similar to those acting in the skin and liver.

JOSEPH K. NAAT MD

Arndt G. Carcinoma Arising in Scars Due to Burns and Symmetrical Carcinoma of the Extremities (Über den krebserregenden Einfluss des symmetrischen Carcinoms der Extremitäten) *Bull. Hn. Ch.* 1933 41:13

The author reports the case of a woman who developed a squamous cell carcinoma on corresponding parts of both legs forty-one years after a burn sustained in childhood. He then reviews briefly the histories of ninety-nine cases of carcinoma developing after a burn which he collected from the literature. Attention is called to the fact that in the author's case the ulcers in the scars healed when at the age of twenty-six years the patient was nursing a child and opened again when the child was weaned.

In discussing the cause of the development of carcinoma in scars the author cites in addition to the theories of Cohnheim, Ribbert, and Virchow the theories of A. and F. Theilhaber who attribute the epithelial proliferation to a chemical change in the mesodermal tissue brought about by the scar. During youth these changes are prevented by good circulation but in old age they are brought about by disturbances in metabolism (vascular occlusion, contraction of scar tissue, new tissue damage). The scars of burns are very frequently the sites of scar cancer. Nine per cent of carcinomata of the extremities and one per cent of all carcinomata arise in burn scars.

A distinction must be made between carcinomata arising after a single burn and those arising after protracted exposure to heat and between carcinomata developing very soon and those developing many years after the injury.

The development of carcinoma after an interval of years occurs chiefly in persons who were burned early in life particularly those burned before the tenth year of age. Burns sustained at more advanced ages are followed by carcinoma without an intervening time interval. In cases in which a severe burn is sustained in youth the danger of the development of cancer is present throughout life whereas in cases in which a burn is sustained at a more advanced age and healing occurs rapidly the danger is practically over after a year. The average interval before the development of carcinoma is thirty-three years. In six cases it was more than sixty years and in one case sixty-nine years. The average age of the

patients is forty-seven years. The younger the patient at the time of the burn the longer the interval before carcinoma occurs.

The extremities are the most frequent sites of carcinoma arising in a burn scar because they are most exposed to burns.

On account of the possibility of complete removal of the carcinomatous tissue the prognosis for cure is favorable. Recurrences may develop after weeks or months but have not been known to occur after two years. According to reports in the literature the incidence of permanent cure ranges from 35 to 100 per cent. In the author's cases it was 62 per cent.

Carcinoma in burn scars is a cornifying squamous epithelial carcinoma. Only nine cases of bilateral carcinoma have been recorded in the literature. No other case of bilateral carcinoma in burn scars has been reported. It is not known what proportion of persons with burns will develop carcinoma in the burn scars. RUEDEL (Z.)

Baker H. S. The Treatment of Cancer with Connective Tissue Extracts *Lancet* 1933 cc. 643

Baker assumes the existence of a factor which inhibits the tendency of living cells to reproduce themselves indefinitely. He believes that this factor is a substance secreted locally outside the blood stream and discharged into the lymph and that if a cell or group of cells is deprived of adequate inhibition—e.g., by lymph stasis or failure of secretion—it will reassert its fundamental tendency toward unlimited growth.

He regards it as not impossible that the inhibitory factor is an enzyme that its major function is lipolytic, that it is secreted in the connective tissues functions to the best advantage in the area of its secretion and in normal persons is destroyed in the lymph glands or the blood stream.

The treatment described is intended to introduce this essential substance into the carcinoma by the intravenous administration of an extract of connective tissue derived from an area in the pig or cow which corresponds to that of the primary growth in the patient. Baker has found that following this treatment the patient loses his cachectic appearance and the carcinoma diminishes in size and becomes attenuated in vigor. These changes suggest that by repeated courses of treatment at increasing intervals the carcinoma may be deprived of its power to destroy life. Assuming that the inhibitory factor has been introduced into the blood stream in sufficient quantity and is circulating, Baker believes it will attack the overgrowth of cells—at any rate cells from its own area—wherever it may meet them. That is to say, its action can be expected to affect metastases as well as the primary growth.

In none of the thirteen cases to which the described treatment was applied was there any lack of response. One patient has survived in relative comfort for a year longer than was expected.

The method employed in making the breast extract is as follows:

Thirty three grams of connective tissue were obtained from 123 gm of cow breast and thoroughly ground with fine sand in 10 c.c.m of glycerol. Ninety cubic centimeters of water were then added and the whole was filtered through a Seitz filter at the maximum pressure consistent with effective sterilization. One half per cent phenol was then added the reaction adjusted 0.5 per cent sodium phosphate added and the pH checked. One tenth per cent sodium taurocholate and 0.2 per cent sodium glycolate were then added the pH was again adjusted and the extract was boiled in nitrogen.

The activity of the extract thus prepared is retained only for from ten to fourteen days. At the end of that time precipitation may occur.

In every case the preliminary dose was 1 c.c.m. Subsequent doses were increased gradually to overcome a postulated increasing resistance of the blood to inhibition. The maximum dose was 25 c.c.m. The interval between doses should not exceed four days.

The immediate result of the injection is flushing of the skin in the region of the needle. This is followed within about thirty seconds by flushing of the face suffusion of the conjunctivae and discomfort in the tongue sometime amounting to pain. If large doses are given these symptoms are followed by a throbbing headache which may last for half an hour. In one case rigors occurred. **JOSEPH K. NARAY, M.D.**

**Carmona L. and Grassellino V. The Oncogenic Action of Tar Subjected to Diverse Physical Treatments. I. Finely Divided Tar.** (Sulla azione oncogena del catrame sottoposto a diversi trattamenti fisici. I. Catrame finemente suddiviso). *Chir. 1933 15 749*

The authors review the literature on tar cancer and particularly the more recent work of Kotzareff who using an electrolyzed tar preparation was able to produce tumors in sixteen days. Kotzareff concluded that the electrolysis caused a dissociation of the molecules so that the active oncogenic principle of the tar was more readily absorbed.

In order to study this phenomenon the authors prepared an emulsion of tar with agar. The tar particles determined microscopically averaged about the size of a red cell but many were smaller. In the first series of experiments the injection of the emulsion in relatively large amounts produced death of all of the animals. The emulsion was relatively more toxic than preparations of unemulsified tar. The injection of smaller doses of the tar emulsion did not cause any toxic symptoms. In the minutely divided particles of tar the authors were unable to demonstrate any oncogenic properties comparable to those noted by Kotzareff.

In the course of their experiments the authors observed the formation of a cyst at the site of the injection of tar in the subcutaneous tissue of the ear of the experimental animal. The cyst was lined with dermal epithelial elements and was connected with the exterior by a very small opening. The authors

believe that cysts of this type are formed by the growth of the epithelial cells of the skin along the needle track to surround the injected material. The chemical nature of the injected material may also be a factor in their formation. **PETER A. ROSE, M.D.**

**Carmona L. Oncogenic Action of Tar Subjected to Various Physical Treatments. II. Tar Subjected to the Action of the Roentgen Rays.** (Sulla azione oncogena del catrame sottoposto a diversi trattamenti fisici. Catrame sottoposto a raggi Roentgen). *Chir. 1933 15 8*

Following the researches of Kotzareff revealing the extraordinary oncogenic action of tar subjected to the electrical current the author undertook studies to determine whether changes would develop from the application of tar previously subjected to the action of the roentgen rays. The tar was irradiated with a definite dose of roentgen rays for periods of fifteen and thirty minutes. Animals painted with this tar seemed to heal faster than the controls. They were painted with non irradiated tar.

In the animals painted with the irradiated tar death occurred sooner than in the controls and was accompanied by marked generalized circulatory and degenerative changes. The oncogenic power of the irradiated tar did not seem particularly changed.

The author believes that the generalized changes were due in some way to the action of the roentgen rays. He suggests that the rays may change some substance in the tar so that it becomes more toxic. Some of the rays may be retained in the tar and passed to the animal or the rays may affect the skin so that the tar itself causes the injury. **A. LOUIS ROSE, M.D.**

## GENERAL BACTERIAL, PROTOZOAN AND PARASITIC INFECTIONS

**Epstein J. W. and Grossman A. B. Bacillus Pyocyaneus in Children.** *Am. J. Dis. Child.* 1933 21 3

*Bacillus pyocyaneus* although of slight pathogenicity in adults may be particularly virulent in children especially infants. It attacks the skin more frequently than any other structure of the body and the skin is usually the portal of entry in cases of systemic infection. Characteristic of the infection are necrotic ulcerations which are especially apt to occur in the anorectal and genital regions. Umbilical wound infections may result in septicaemia. Not infrequently the bacillus provokes the cause of omphalitis which is one of the most common infections of childhood. Pyocyanin infection of the eyes is rare in children because it usually follows an industrial injury. The organism often infects the respiratory system. Not uncommonly the invade the gastrointestinal tract. Eruptions of summer diarrhoea may result from infection. Infection of the urinary tract and meningitis are relatively infrequent. Blood infection and lesions of the bones occur occasionally.

The authors report a fatal case of bacillus pyocyaneus infection in a child seven years of age. Two days before admission to the hospital the patient had a temperature of 104 degrees F. and complained of excruciating pain in the region of the rectum. Rectal examination was negative except for pain. The temperature was of the septic type. Four days after the onset pericarditis developed. Eleven days after the onset under nitrous oxide anesthesia a gangrenous area about the rectum was incised. No pus was obtained. A culture made from the gangrenous tissue showed an abundant growth of bacillus pyocyaneus. Four days later the patient was comatose, the abdomen became distended and purpuric spots appeared over the mid dorsal and sacral regions. Death occurred the following day. During the illness the leucocyte count was low, ranging from 3,200 at the time of the patient's admission to the hospital to 1,600 two days before death. At autopsy a culture of the heart blood and from the gangrenous region of the buttocks yielded an abundant growth of bacillus pyocyaneus and bacillus coli.

In conclusion the authors state that because of the characteristic skin lesions the diagnosis of bacillus pyocyaneus infection is not difficult.

ALTO OCHSNER M.D.

Germain H. The Therapy of General Streptococcal Infection. (*De la thérapeutique de l'infection générale à ptococq. R. de h. Pa.* 1933 h. 433)

The author includes with cases of general streptococcal infection all cases in which streptococci or their toxins are present in the blood stream with or without metastases. He points out that during life the blood is not a good culture medium for streptococci. Therefore the organisms do not multiply but are merely transported in the blood stream. They may be killed off or may lodge in the various tissues and give rise to new point of inoculation. The primary infection may have its origin in very small foci in the skin, tonsils, teeth or nose which require a careful search for their discovery. The streptococcus is an important factor in suppurative thrombophlebitis. The demonstration of streptococci in the circulating blood is not always proof of a grave general infection as the organisms may be thrown out from a focus and rapidly destroyed. To a certain extent a variation in the virulence of streptococcal infection depend upon the strain of the organism.

Prophylactic measures against general streptococcal infection are strict asepsis, proper drainage when it is impossible to remove the focus completely, the use of the diathermy knife and sterilization of the infected areas by the Carrel technique.

Curative treatment depends to a great extent upon proper handling of the primary focus. Under different conditions this demands different measures such as (1) total eradication of the focus (2) drainage (3) amputation and (4) ligation or resection

of the efferent veins. At all times it must be borne in mind that interference should either be very drastic or else associated with minimal operative trauma. Secondary metastases should be cared for in the same manner.

The author discusses also biological procedures (1) Fochier's method of producing a sterile abscess in an effort to cause a hyperleucocytosis (2) the injection of milk or peptone (3) the use of colloidal metals (4) the use of streptococcal vaccines and the local application of bacterial products (5) the use of anti streptococcal serum (6) transfusion and immunotransfusion (Wright) (7) the use of bacteriophage and (8) chemotherapy with such substance as sodium salicylate, urotropin, mercurochrome, sodium nucleinate and isotonic glucose.

In conclusion Germain states that a combination of surgical treatment of the focus by the methods described and adequate anti streptococcal serum therapy or immunotransfusion yield the best results in cases of the type under discussion.

MARSH W. POOL M.D.

## DUCTLESS GLANDS

Hubble D. The Influence of the Endocrine System in Blood Disorders. *Lancet* 1933 cc. 13

This article presents a thorough review of the literature on the experimental and clinical evidence relating to the effect of the thyroid, adrenal cortex and the anterior lobe of the pituitary gland on hematopoiesis. The second part of the article is devoted to some interesting hypotheses on endocrine dysfunction as a cause of blood dyscrasias.

From the literature it appears that the thyroid hormone stimulates the formation of erythrocytes and lymphocytes and has a tendency to depress the granulocytes. The adrenal cortex stimulates the formation of granulocytes and possibly has some stimulating effect on erythropoiesis. The basophile cells of the anterior lobe of the pituitary gland stimulate all types of blood cells, giving rise to the picture of polycythemia. On the basis of these facts it is suggested that blood disorders with hyperplasia or hypoplasia of the blood cell may be secondary to excessive or deficient endocrine function. The author summarizes this relationship in the following table:

Pituitary basophil	Stimulates	Pituitary anterior lobe	Stimulates
Erythrocytes	↑	Erythrocytes	↑
Lymphocytes	↑	Lymphocytes	↑
Granulocytes	↓	Granulocytes	↓
Thrombocytes	↑	Thrombocytes	↑

Many observations reported in the literature support such an etiological relationship.

The occurrence of polycythemia in pituitary basophilism and the similarities between exophthalmic goiter and chronic lymphatic leukemia as regards symptoms, basal metabolism and response to iodine are discussed at length. Further lines of investigation are suggested to test the hypotheses presented.

HIO ARD I. ALT M.D.

Christie R. V. The Function of the Carotid Gland  
I. The Action of Extracts of a Carotid Gland  
Tumor in Man. *Endocrinology* 1933 xvii 421

Extracts of a carotid gland tumor in which the morphological character of the cells was comparable to that of the cells of the normal carotid gland were found to contain in high concentration a thermostable vasodepressor principle which differs in its properties from acetyl choline, adenylic acid and histamine. The author suggests the name of carotidin for this substance. Its action on the blood pressure, the pulse rate and the virgin uterus is directly opposite to that of adrenalin. As far as is known, neither the carotid gland nor the sinus has any sympathetic innervation.

GEORGE A. COLLETT, M.D.

Christie R. V. The Function of the Carotid Gland  
II. The Action of Extracts of the Carotid Gland  
of the Elasmobranch. *Endocrinology* 1933 xvii 433

The carotid gland of the elasmobranch has been shown to contain two active principles. The one a vasopressor principle acting on the constrictor myoneural junctions is indistinguishable from adrenalin. The other a vasodepressor principle for which the author suggests the name carotidin is similar in

its action on the blood pressure and the virgin guinea pig uterus to the principle which he isolated from a human carotid gland tumor.

GEORGE A. COLLETT, M.D.

## EXPERIMENTAL SURGERY

Howes E. L. The Strength of Wounds Sutured  
with Catgut and Silk. *Surg. Gynecol. Obstet.* 1933  
lxv 309

Experimental wounds in the stomachs of rats which were sutured with catgut and silk of the same and different sizes demonstrated that fibroblasts began earlier and the wounds gained strength more rapidly when the suturing was done with silk than when it was done with catgut. Microscopic sections showed the exudative phase to be of shorter duration in the wounds sutured with silk than in those sutured with catgut. The larger sizes of silk or catgut give no additional strength to the wounds either immediately after the suturing or during healing.

The efficacy of catgut and silk as suture materials and the indications and contra-indications for their use are discussed. The author states that silk must be employed by a definite technique and that catgut would have greater efficiency if it were used according to the same technique. JACOB M. MORA, M.D.

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# International Abstract of Surgery

*Supplementary to*  
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# INTERNATIONAL ABSTRACT OF SURGERY

FEBRUARY 1934

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

Mayer L. Recurrent Dislocation of the Jaw  
J B & J 15 1933 889

Mayer describes a new operation for the cure of intractable slipping of the temporomandibular joint. It consists in the formation of a bone block just anterior to the eminentia articularis of the temporal bone to prevent forward sliding of the condylar process of the mandible.

The symptom of true intra articular disturbance of the jaw joint usually consist of a snapping sensation, pain and locking of the joint. These are due either to a true dislocation or an internal derangement usually associated with abnormality of the interarticular fibrocartilage. In the latter type there is abnormal laxity of the cartilage. This may be cured by removal of the meniscus just as is done in the knee joint. One such case is reported.

In cases of true dislocation of the jaw there is shallowness of the temporal fossa which allows the condyle to rise forward from it over the eminentia articularis. The author's operation is carried out under local anesthesia. The posterior portion of the zygomatic process or the affected joint is exposed by a horizontal incision which is extended posteriorly over the pinna of the ear. One inch of the process is resected, care being taken to prevent injury of the branches of the facial nerve. The capsule of the joint is opened and the movements of the sliding condyle and cartilage are observed as the patient opens his mouth. The cartilage is usually removed and the resected bone used as a graft by inserting it into a vertical groove cut in the temporal bone just anterior to the eminentia articularis. The effect of the bone block is then studied as the patient again opens his mouth. The capsule is closed carefully. On completion of the operation a plaster helmet entirely encasing the head is applied for from four to six weeks.

The author reports three cases in which this operation resulted in cure. MARICE MEYER, M.D.

### EYE

Gray W A. The Ocular Conditions in Diabetes Mellitus. B & J Ophth 1933 577

The incidence of retinitis vitreous hemorrhage and ocular palsies was determined in 500 cases of diabetes mellitus and the incidence of arteriosclerosis of the retinal arteries and cataract visible on ophthalmoscopic examination in 788. The state and reactions of the pupils were investigated in 7 cases of coma, 24 cases of hypoglycemia (following an overdose of insulin) and 20 cases of diabetes mellitus with marked acidosis. In the cases of diabetic coma the intra ocular tension was recorded. In an additional 80 cases of diabetes mellitus an examination was made under full mydriasis with the Gullstrand slit lamp to determine whether the incidence of cataract and early lens changes is higher in diabetics than in persons without diabetes. Altogether 583 diabetes were examined. True diabetic cataract was found in only 2.

With regard to arteriosclerosis of the retinal vessels the author draws the following conclusions:

The incidence of retinal sclerosis increases with age.

2. A definite relationship exists between arteriosclerosis of the retina and arteriosclerosis in other part of the body.

3. Even slight evidence of vessel change in the retina is important since it is highly probable that more pronounced changes may be present elsewhere.

From his study of 60 cases of retinitis found in 500 cases of diabetes Gray concludes as follows:

1. A characteristic form of retinitis is common in diabetes. It begins in the central part of the retina as whitish yellow spots.

2. The small amount of sclerosis of the retinal vessels is an important point of differentiation from retinitis of other origin.

3. Hemorrhages may be due to a toxin causing changes in the vessels or to hypertension. The latter is probably a secondary mechanical factor.



With regard to pupillary changes in diabetes the author states that the size of the pupil in coma is not characteristic and that he observed no change in the pupil in hypoglycæmia.

The changes in the vitreous in diabetes led to the following conclusions:

1. A reduction in intra-ocular tension occurs in a large percentage of cases of diabetic coma.

2. The decrease in the eye pressure occurs after vomiting and the development of respiratory disturbances.

3. The cause seems to be a disturbance of the molecular concentrations of the tissue fluids and blood following the acidosis and dehydration.

The effect of insulin on the intra-ocular pressure was studied in (1) 45 cases balanced on diet (2) 43 cases balanced on insulin and diet (3) 6 progressive cases (4) 4 new cases before and after the administration of insulin and (5) 3 cases in which the condition became worse under dietary treatment but balanced under insulin treatment. No case of glaucoma was seen. No difference could be found in cases of hyperglycæmia. The continued administration of insulin did not cause any alteration in the general level of the ocular tension. The ocular tension was the same as in diabetics treated with diet alone.

If the intra-ocular tension is changed either by hyperglycæmia or by insulin changes should be noted in (1) progressive cases of diabetes (2) new cases before and after the administration of insulin and (3) cases in which insulin treatment is discontinued.

An overdose of insulin produces a condition which closely resembles coma. Since softness of the eyeball is traditionally associated with diabetic coma its absence in hyperinsulin coma would be of considerable diagnostic importance.

From his studies of vitreous hemorrhage the author draws the following conclusions:

1. Vitreous hemorrhage has been found constantly associated with an infective focus somewhere in the body.

2. The amount of hemorrhage may be dependent on the condition of the vitreous and the retinal vessel.

3. Hypertension in the retinal vessel is usually found in cases of vitreous hemorrhage.

In discussing lens changes France in 1857 pointed out that a rapidly increasing bilateral opacity of the lens is characteristic of diabetes. Patients with such changes are young and suffering from a fairly severe form of diabetes. Among the cases studied by the author there were 2 such cases—one that of a man twenty-six years of age who had been diabetic for five years and the other that of a girl seventeen years of age whose sight first became affected two years after the onset of diabetes.

The value of insulin in ophthalmic as well as in the operations was early recognized. Today the prognosis of cataract needlings and extractions is as favorable in the cases of diabetics as in those of persons without diabetes.

In 2 of the author's cases of ocular nerve paresis associated with diabetes the third nerve was affected. The patients were sixty and sixty-three years of age. They had been treated for four and eight years respectively. One had been treated only by diet the other had received insulin treatment for two years. Both had arteriosclerosis and one had diabetic retinitis. The symptoms which were of sudden onset consisted of unilateral ptosis with external strabismus. Treatment with iodides for from two to three months resulted in complete recovery.

LESLIE L. MCCOY M.D.

Julienne L. A. and Harrison R. W. The Transmissibility of Trachoma to Monkeys. *Am. J. Ophth.* 1933. 8:7.

The eyes of monkeys can be infected by material from human beings suffering from trachoma. The infection is transmitted equally well by swabbing and injecting. The incubation period varies from five days to three weeks. Follicles appear in a week or two and increase in number for several weeks. None has appeared on the bulbar conjunctiva or cornea. The papillary form has never been noted. The infection is limited to the conjunctiva; the cornea is not involved. VICTOR WISCOFF M.D.

Kuznetskaya E. D. Trachoma Treatment with Chaulmoogra Oil. *Tr. Khark. 933* 2, 3:3.

Delanoe in 1906 was the first to suggest chaulmoogra oil for the treatment of trachoma. In a period of eight years she used it in 25,000 cases. However, she was unable to determine the final results. Others have obtained successful results from this treatment but do not consider it a specific remedy for trachoma.

Kuznetskaya has used it in 25 cases representing all stages of trachoma. From these cases and a review of the literature he concludes:

1. Chaulmoogra oil can be used successfully in all stages of trachoma.

2. Patients react well to treatment with chaulmoogra oil because it is painless, causes only slight irritation, results in rapid disappearance of photophobia, blepharospasm and catarrhal secretion and reduces the pannus.

3. However, chaulmoogra oil is not specific for trachoma; the treatment is long; the results are not lasting and relapses have been observed.

4. The effect of chaulmoogra oil is due partly to the method of application. The massage has a salutary effect on the conjunctiva and pannus. Chaulmoogra oil possesses bactericidal properties.

5. Copper chaulmoograte (obtained by adding soda acids of saponified oil to copper salts) combined with 3 per cent dextrin and used in the form of a pencil does not give a lasting result and irritates the eye more than chaulmoogra oil.

6. The eye tolerates better the unguent of chaulmoogra copper salt. This aids resolution of the pannus but does not give a lasting result.

LESLIE L. MCCOY M.D.

Laborde S. Epitheliomata of the Eyelids and Their Treatment With Radium (L'épithéliomatoses des paupières et leur traitement par le radium) *Pres Méd* Par 1933 11 1548

Physicians as a rule have hesitated to treat epitheliomata of the eyelids by irradiation because of fear of injuring the eyes. Cases of injury of the cornea and lens and of glaucoma following irradiation have been reported.

However the author believes that when the proper technique is employed the tissues of the eye are not especially sensitive to irradiation and particularly not to irradiation with radium. He prefers radium to the roentgen rays because the application of radium to the tumor can be more accurately controlled. Instead of the usual method of applying the radium to the surface by means of a mould of wax or other material he employs radium puncture. This method can be used even when the tumor is at the free border of the eyelid or at the internal commissure. Laborde uses needles containing 2 mgm. of radium filtered through 0.5 mm. of platinum and varying in length according to the size of the tumor. The introduction of such needles is not difficult and no occlusion dressing is necessary. The amount of radium employed often does not exceed 2 to 4 mgm. and is generally applied in from three to five days. Only a single treatment should be given. Insufficient and repeated irradiations cause the tumors to become resistant to the rays.

Of sixteen epitheliomata invading the bone which were seen by the author eleven had been irradiated elsewhere with insufficient and frequently repeated doses of roentgen rays.

Laborde has treated fifty cases by the method he describes. The tumor disappeared in fifty. Cicatrization generally leaves no trace except slight pigmentation. Slight deformity was seen only in cases in which the tumor was located on the free border of the eyelid. There is no danger of late accidents in the use of the method.

A. DREY COSS MORGAN M.D.

Gamble R. C. Acute Inflammation of the Orbit in Children. *Ch. Ophth.* 9 3 433

The most common cause of acute inflammations of the orbit is disease of the sinuses but in some cases dacryocystitis, an infection of the lid or brain abscess may be responsible. As the mortality and morbidity of these conditions are high prompt and efficient treatment is necessary. The difference between orbital inflammations in children and adults is explained by the developing sinuses and tooth buds, the greater softness and better nourishment of the tissues, and the greater resistance of the cornea in children.

The author reports twenty-six cases of acute inflammations of the orbit in children. Death occurred in two cases, involvement of the cornea in two cases, paresis of the external rectus in one case and paresis of the levator in one case.

VIRGIN WESCOTT M.D.

Dobrzaniecki W. and Sowiakowski J. Tumors of the Orbit (Les tumeurs de l'orbite) *J. d. Ch.* 1933 21 1 20

The authors classify tumors of the orbit seen by them as follows:

- 1 Tumors originating in the globe
- 2 Tumors arising in the bony wall and retrobulbar tissues
- 3 Tumors arising from neighboring structures
- 4 Degenerations of the periorbital structures superior maxilla and frontal sinus and idiopathic protrusion of the eyeball

4 Atresia of the orbit  
Tumors of the eye and retrobulbar tissues commonly cause loss of sight, scintillation, diplopia, difficulties in accommodation, keratitis, interstitial papilledema, loss of movement, local pain, headache, protrusion of the globe and protrusion of the orbital wall. Tumors of the eye are generally sarcomata or melanosarcomata and are extremely malignant. They early involve the pretragal lymph nodes and sometimes the submaxillary nodes. The best treatment is enucleation followed by irradiation. The prognosis is poor, death commonly resulting from early extensive growth or late metastases.

The classification of retrobulbar tumors is difficult as there are many conditions, inflammatory states and pseudotumors which simulate true tumors. In contrast to tumors of the eye, retrobulbar tumors rarely involve the pretragal lymph nodes and frequently invade the submaxillary nodes. They are commonly removed according to the method of Kroenlein (lateral approach) which gives adequate exposure without great mutilation of the orbital contents. The result are generally fair, good.

In cases of tumors of the eyelids the results of treatment are unsatisfactory. Metastases occur early in the disease and late after excision of the primary tumor. Moreover removal of the growth is technically difficult as it frequently requires wide dissection.

In cases of tumors of the maxilla which are generally sarcomata the results are extremely discouraging. Mucocoeles and cholesteatomata arising from the frontal sinus sometimes invade the orbit but may be removed with satisfactory results.

The authors conclude their article with a discussion of a case of idiopathic protrusion of the globe in which two explorations were negative and a case of congenital atresia of the orbits with absence of the eyeballs.

JOHN W. LINTON M.D.

Hamby W. B. and Gardner W. J. The Treatment of Pulsating Exophthalmos with the Removal of Two Cases. *A. S. J.* 9 33 66

Pulsating exophthalmos is not common. The usual history in cases of this condition is that of trauma followed by unconsciousness, failure of vision, proptosis and a roaring sound in the head. Autopsy reveals an opening in the internal carotid

artery in the cavernous sinus. The usual method of treatment has been ligation of the internal carotid artery but the complications and end results have led to the hope of a better method. At the site of involvement in this condition the usual treatment of aneurism is impossible and dangerous.

The authors attempted to treat two cases by the method proposed by Brooks. In this procedure strips of muscle tissue are inserted into the artery and the blood stream to plug the fistula. In the authors' cases digital compression was practiced for several days before the operation. In the first case the operation was carried out successfully. In the second the attempt to insert a muscle plug was unsuccessful. The vessel was therefore ligated and cut the common carotid ligated and the incision closed. Later the internal carotid was ligated through a frontal craniotomy and fourteen days after the craniotomy the carotids on the other side were ligated.

VIRGIN WASCOTT M.D.

### EAR

Kopetzky S. J. and Almour R. Empyema of the Petrous Apex. Further Observations and Case Report. *Ann Otol Rhinol & Laryngol* 1933 xlii 80

Involvement of the petrous apex in pneumatized bones is of two types. It is either an acute lesion with threatened meningial involvement or a chronic type of invasion without threatened meningial involvement. The chronic type gives rise to a chronic otorrhea in a pneumatized temporal bone. Involvement of the petrous pyramid is a complication of tympanic suppuration and not a complication of mastoid involvement.

From pathological evidence the location of spontaneous fistulae and the results obtained in both acute and chronic types of petrosal pyramid suppuration the authors conclude that the Almour surgical technique is adequate for the establishment of drainage and the cure of suppuration of the pyramid which is located in pneumatized bones. They state that by this technique no damage is done to the cochlea, facial nerve or carotid artery.

GEORGE R. McCLINTOCK M.D.

### NOSE AND SINUSES

Proetz A. W. Studies of Nasal Cilia in the Living Mammal. *Ann Otol Rhinol & Laryngol* 1933 xlii 778

The author believes that the behavior of the cilia in the nose and sinuses is of importance in the defense against colds. As microscopic examination of the human sinus lining during life has not been feasible he has made parallel studies of extirpated human membranes and the membranes of living rabbits under direct vertical vision with a magnification of 104 diameters and a motion picture record to permit repeated examination and deliberate analysis.

Of twenty-two specimens removed at operation some from severely infected sinuses twenty-one showed the cilia beating vigorously. Clinically the most important observation is the effect of drying which causes the cilia to cease beating. The author believes that partial closure of the nasal chambers as the result of chilling local irritation, intestinal disturbances and anatomical deviations has a drying effect which interferes with the proper ciliary propulsion of mucus and thereby exposes the membrane to infection.

GEORGE R. McCLINTOCK M.D.

### PHARYNX

Salinger S. Malignancies of the Upper Air Passages. A Statistical Review. *Ann Otol Rhinol & Laryngol* 1933 xlii 80

The author reviews the results of treatment of malignancy of the upper air passages as shown by a series of reports in the German literature and compares them with results obtained in large medical centers which have been reported elsewhere. He states that formerly there were many failures but the results have been improved by earlier diagnosis, increased recognition of the radiosensitivity of the various types of malignancy and the new techniques of irradiation advanced by Coutard and Berven.

In cases of epipharyngeal neoplasms cases were formerly rare but today with the Coutard method of protracted fractional X-ray irradiation a tonishingly good results are sometimes obtained. In the treatment of malignancy of the sinuses and maxilla surgery is still used most frequently but irradiation is also regarded as important. In the treatment of neoplasms of the epipharynx it has been found that sarcomata yield to irradiation much more readily than carcinomata and better results are obtained by the Coutard method than by the older technique. With the teluradium of Berven malignancy of the tonsil was cured in 50 per cent of eighteen cases. In inoperable carcinoma of the larynx the use of the Coutard technique is followed by recovery in from 20 to 63 per cent of cases.

GEORGE R. McCLINTOCK M.D.

### NECK

Beck A. L. A Study of Twenty-Four Cases of Neck Infection. *Ann Otol Rhinol & Laryngol* 1933 xlii 4

The author discusses especially deep pus in the neck. His article is based on twenty-four cases of neck infection all except two of which were treated surgically.

The site of entrance of the infection should be determined since when this is known it may be possible to anticipate the course of the infection. The most common site of origin of neck infections is the tonsils and the next most common the pharynx. Of the cases reviewed fourteen (58 per cent) were due to tonsillar or pharyngeal inflammations and three to dental infection.

proper treatment of infections of the neck requires a knowledge of the anatomy of the cervical fascia. The author gives a detailed description of this anatomy based on the work of Mosher.

The surgical approaches for drainage of various sites of suppuration are summarized briefly.

1. Prevertebral fascia infection or retropharyngeal abscess (a) direct incision of the pharyngeal wall through the mouth (b) incision along the anterior border of the sternomastoid muscle lateral to the jaw as recommended by Dean.

2. Parotid and submaxillary space infection (a) approach through the submaxillary space after elevation of the gland as recommended by Mosher (b) approach beneath the angle of the jaw directly without elevation of the gland.

3. Carotid sheath and cervical fascia infection (a) incision along the anterior border of the sternomastoid muscle as for jugular resection.

4. Anterior triangle infection (incision along or behind the posterior border of the sternomastoid muscle).

The implications occurring in the cases reviewed were thrombosis of the internal jugular vein, blood stream infection, demonstrated by positive cultures, rupture into the external auditory canal, acute mastoiditis with thrombosis of the sigmoid sinus, phlebitis of the internal jugular vein, without thrombosis, thrombosis of the internal jugular vein and cavernous sinus, thrombosis of veins of the legs, follow-up by abscess formation, thrombosis of veins in the right iliac of the pelvis, followed by pelvic abscess, abscess of the hip joint, bilateral hemiparesis, secondary thrombosis from veins in the pharyngo-maxillary space, cystitis, parotiditis of the ninth and eleventh cranial nerves, parotiditis of the twelfth cranial nerve and paralysis of the parathyroid glands of the cervical sympathetic nerve. The first two each occurred twice and the others once each.

The findings show that sequestrate drainage can be obtained only through the external route. Immediate drainage does not bring about immediate subsidence of the infection, an external incision should be made with an incision.

Thrombosis of the internal jugular vein without other thrombotic lesions present.

Swelling of the lateral pharyngeal wall is an early infection, not recognized initially, accompanied by redness in some cases, the pharyngeal wall may be inflamed.

One fifth of the patients had signs of infection in the pharynx, maxillary sinusitis, trismus. This is a late finding, following the initial pharyngeal incision by the external approach.

Chills, sweats and high rises in the temperature accompany the infection. The patient usually requires jugular resection, but continues for some days after the establishment of adequate drainage. However, the immediate sternomastoid drainage of the infection is effective.

When the patient is referred for treatment the neck may be enlarged, the lymphatic glands may be enlarged.

he is seen early the differentiation is sometimes difficult.

The external swelling may be barely distinguishable. Therefore it is no criterion of the necessity for external drainage. Absence of an external swelling does not contraindicate external drainage if sepsis is present. Infection of a fascial plane may be present without visible evidence of pus.

The blood may remain negative despite the existence of a phlebitis, even when the blood to be cultured is withdrawn from the internal jugular vein.

Cervical gland abscesses usually remain superficial and localized, but occasionally the infection spreads along the layers of the deep fascia, causing a change in the picture which necessitates drainage of the spaces involved.

Infection of the prevertebral fascia constitutes the well known condition called retropharyngeal abscess. When the case is seen early and drainage is established before there is obstruction to breathing, recovery is prompt. If the condition is untreated, death results from asphyxia due to capping of the larynx by the protruding posterior pharyngeal wall rather than from extension of the infection into the chest.

Torticollis from infection under the sternomastoid muscle is toward the opposite side. Torticollis from infection along the prevertebral muscle and trapezius is toward the same side.

The ears should be frequently inspected as there may be a coincident tympanomastoid inflammation.

The sepsis or septicopyemia may go on to a fatal termination without an apparent increase in the severity of the local manifestations.

Chills are to be expected. Blood for culture should be taken during or immediately after the first chill. Blood cultures may become negative after the vein becomes blocked by the thrombus.

After the occurrence of thrombosis of the jugular vein metastatic abscesses following thromboses in distant veins are common.

The author draws the following conclusions:

1. Jugular thromboses from infection in the planes of the cervical fascia are going unrecognized and causing death from septicemia.

2. Absence of frank local manifestation of the infection, not a swelling, is common.

3. Delayed surgery is apt to be disastrous.

NO MANUSCRIPT RECEIVED

McGarrison, S. R. Food and Colter, F. M. J. 1913, 6, 1.

The factors influencing the size of the thyroid gland are multiple and have manifold interactions. They include hereditary influences, individual differences, age, sex, sexual activity, physical factors, season, locality, altitude, distance from the sea, coast, sanitary condition, and diet. Of these the most important is diet. In Graves' disease a great deal is harmful to the case of milk, especially beef. In rat, the gland can be produced by various factors. In some of these elements, potassium is not

be prevented by iodine. An excess of fat or calcium and a deficiency of vitamins A, B, or C are goitrogenic. Polluted water is goitrogenic when taken alone or with an unbalanced diet but not when taken with a balanced diet. There is no incontrovertible evidence that iodine deficiency alone is the essential cause of goiter. In some localities where the iodine content of the soil is high goiter prevails whereas in some where the iodine content of the soil is low goiter is not prevalent.

PALL STARR, M.D.

Waterworth S. J. P. Operative and Postoperative Treatment of Bad Risk Plus Four Toxic Goiter. *W. J. Surg. Obst. & Gynec.* 1933, 21: 53.

Waterworth classifies his 47 poor risk cases of toxic goiter into the following seven groups: (1) acutely toxic diffuse goiter usually in patients under forty years of age; (2) acutely toxic nodular goiter usually in patients over forty years of age; (3) acutely toxic goiter with complications such as oral sepsis, asthma, and ulcer; (4) atypical goiter with neurocirculatory asthenia which may not be benefited by operation; (5) cases with mental deterioration possibly due to encephalitis; (6) goiter with dementia praecox; and (7) intrathoracic goiter.

All of Waterworth's patients are sent to the hospital for pre-operative study. Repeated readings of the basal metabolism are made after the administration of barbiturates. The patients who can then be sent home without risk are prepared at home by intensive iodization, bed rest, and the administration of sedatives over a period of two weeks. Longer preparation is useless. Myxedematous and obese patients are given thyroid extract and patients with hyperthyroidism receive forced feedings and fluids unless they are exedematous. When exedematous they are given no asural and ammonium citrate.

After two weeks the patients are re-examined. A gain in weight is a favorable sign and an increase in the basal metabolism an unfavorable sign. Patients with colds are not operated upon. The blood calcium is determined before operation.

Very ill patients are kept in the hospital for preparation. Delirious patients are restrained and fed by nasal catheter. Patients with persistent hyperglycemia and glycosuria are given small amounts of insulin. The quantity of fluid given is determined by the relation of intake to output but 10 per cent glucose may be administered intravenously even to exedematous patients if suitable precautions are taken. If necessary, 50 drops of Lugol's solution may be added to each 1000 c.c.m. of saline solution before and after operation.

When skin irritation develops after the use of barbiturates, black wash is beneficial.

The surgeon should watch for fecal impaction and distention of the bladder. In the cases of maniacal patients who receive morphine and hyoscine, males with prostatic obstruction and all patients who are given large amounts of morphine an indwelling catheter is useful.

After operation, all of the author's patients receive carbon dioxide and oxygen inhalations at four hourly intervals. If cyanosis occurs they are placed in an oxygen tent and if stridor develops tracheotomy is done.

In five cases bilateral laryngeal nerve injury occurred. The best results were obtained when a laryngeal fistula was formed. Unilateral injury of the laryngeal nerve causes little subsequent trouble. A pre-operative laryngeal examination should be made routinely.

Borderline parathyroid tetany indicated by restlessness yields well to parathormone.

If fresh nodules accompanied by toxicity develop after operation they should be injected with equal parts of alcohol, phenol, and iodine unless they are too close to the recurrent nerve. Cystic nodules should be drained by needle. The injection of a few drops of iodine into the cysts is helpful. Non-toxic recurrent nodules yield to thyroid extract.

F. S. MODERN, M.D.

Welt, H. The Surgery of the Parathyroids. I. The Surgical Anatomy of the Parathyroids. The Significance of Calcemia. The Syndrome of Hypoparathyroidism. (*La chirurgie des parathyroïdes. I. Anatomie chirurgicale des parathyroïdes. Signification de la calcémie. Le syndrome d'hypoparathyroïdisme.*) *J. d'Ch.* 1933, 21: 51.

In discussing the surgical anatomy of the parathyroids the author calls attention to the fact that each gland is supplied by a single terminal artery which does not divide until after it enters the hilum of the gland. The inferior parathyroids are always supplied by the inferior thyroid artery. In 83 per cent of cases the same artery supplies the superior parathyroids. In the remaining 17 per cent the superior parathyroids receive the blood supply from the superior thyroid artery.

In the dog the removal of three parathyroids and in man the removal of one or two does not affect the blood calcium.

Acute postoperative tetany can usually be controlled by the administration of calcium parathormone, thyroid extract combined with parathyroid extract and antispasmodic drugs.

In chronic tetany parathormone must be used cautiously, too large doses may depress the parathyroid secretion. Heliotherapy and Vitamin D seem to have a favorable influence.

The author gives detailed directions for the isolation of the parathyroid in operations on the thyroid.

M. RICH W. POOLE, M.D.

Gardner, H. O. Fractures of the Larynx with the Report of a Case. *A. A. O. O. J.* 1933, 21: 449.

Fractures of the larynx are relatively infrequent. The author was able to collect only 156 cases from the literature. They occur usually in adults and more frequently in males than in females. Their infrequency is explained by the great mobility of the

larynx and the protection afforded the larynx by the chin. The most common cause is compression such as is produced by throttling or striking the neck in a fall. One or more of the cartilages may be affected. The thyroid cartilage is broken most often and the cricoid next most often.

The symptoms are variable but usually consist of pain, tenderness, dyspnea, hoarseness and bloody sputum. Loss of consciousness is not uncommon. Subcutaneous emphysema is frequent. The diagnosis is often difficult. The most important diagnostic signs are the emphysema and bloody sputum. There may be deformity of the neck and crepitation. The fracture may be revealed by roentgen ray examination.

The prognosis is usually grave, the mortality being about 30 per cent. Death may occur immediately from asphyxia or hemorrhage or later from infection, pneumonia or emphysema. Permanent hoarseness frequently results and stenosis of the larynx may ensue.

In mild cases palliative and expectant treatment may be indicated. Immediate tracheotomy may be necessary. Some surgeons believe that tracheotomy is advisable in all cases. In selected cases laryngofissure or laryngotomy may be indicated instead of tracheotomy.

In the case reported by the author the fracture was caused by a blow on the neck sustained during a

boxing match. Recovery followed drainage of an abscess and subsequent laryngectomy.

LEO M. ZIMMERMAN, M.D.

Myerson, M. C. Cysts of the Larynx. *Arch. Of Surg.* 1933, VII, 281.

Myerson reports three cases of cysts of the larynx in one of which cystic masses were present also in the trachea.

Four types of cysts are described: congenital, retention, lymph or blood, and traumatic or implantation cysts. Laryngeal cysts may occur at any age. The smaller cysts are usually found on the vocal cord, while the larger ones are most often attached to the epiglottis.

The symptoms depend on the location and size of the cyst. There may be varying degrees of hoarseness, dyspnea, stridor and dysphagia.

The prognosis is grave in the cases of very young patients and may be grave also in those of older patients if the cyst suddenly increases in size.

The treatment varies according to the size and location of the cyst and the age of the patient. In the cases of very young patients temporary relief is afforded by puncture of the cyst wall with the cauterizer. This keeps the cyst empty until the infant is able to tolerate its removal. Total removal is the only certain means of cure.

JACOB M. MORA, M.D.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

Dusser de Barenne J. G. Corticalization of Function and Functional Localization in the Cerebral Cortex. *Arch. Neurol. & Psychiat.* 1933, 33: 884.

The author discusses corticalization of function giving the more recent chief physiological evidence for the shift of functional dominance as one ascend the animal scale.

In the cat and dog motor functions are rapidly and almost completely restored after total extirpation of the cortex. The removal of a whole hemisphere results in very little more evidence of motor deficiency than is present after a circumscribed lesion of the sensorimotor area. In higher animals such as the monkey the result is much more pronounced and prolonged after removal of one hemisphere. This indicates that in the higher animal other parts of the hemisphere participate in the elaboration of motility. In man similar lesions are more profound and of longer duration but a surprising recovery of function may take place.

The increase in the functional importance of the motor cortex in higher animals is manifested also in stimulation experiments. More finely graded responses can be obtained in monkeys from cortical stimulation than in cats and dogs. The tendency of recent stimulation experiments in monkeys and in man is to extend the electrically excitable foci of the cortex over the precentral and postcentral regions. A bilateral representation of motility in lower animals is indicated from certain observations. Bilateral movements may result from cortical stimulation which normally gives rise only to unilateral responses. The same is true in the higher species such as the baboon. After the cortical foot area on one side has been removed subsequent removal of the second foot area results in a distinct increase of motor impairment and a change in the Babinski response observed in the leg first affected.

The sensory functions of cutaneous and deep sensibility are contained in large cortical areas. In the cat and dog the sensory cortical area to a great extent coincides with the electrically excitable region indicating the existence in these species of a true sensorimotor area. Experimental lesions in this sensorimotor field produce impairment of cutaneous sensitivity to touch pain and thermal stimuli and also of deep sensibility. The former group of symptoms rapidly diminishes but impairment of deep sensibility persists. According to the results of extirpation experiments in monkeys the sensory area lies chiefly in the postcentral gyrus and the adjacent parts of the parietal cortex. The area is the

central fissure a the boundary between a precentral motor and a postcentral sensory area. Similar observations are to be made in man. Precentral lesions are not followed by apparent sensory aspects and postcentral lesions are not followed by definite motor impairment except for a certain amount of ataxia. However the author states that in the case of the higher mammal this conception must be modified as at least in the macacus the precentral cortex is endowed with sensory function.

The primary visual cortex in mammal coincides with the area striata and does not lie on the convexity of the occipital lobe. In man bilateral destruction of the area striata results apparently in complete blindness.

The exact location and extent of the auditory cortex has not as yet been satisfactorily determined. Cats are able to localize sounds following extirpation of the whole neocortex. Even in man with bilateral total destruction of the auditory cortex (the middle portion of the first temporal gyrus and Heschl's gyrus) there may remain intact acts of audition.

The cortical areas of olfactory and gustatory functions in man are not definitely known.

Frontal lobe lesions cause no defects in voluntary power but defective coordinative adjustment in the movements of the eyes and head locomotion and posture abnormal tonus disturbance forced gasping forced crying and catalepsy have been described. Loss or defects in apperception memory and spatial circulation are among the most frequently reported symptoms.

The anterior part of the parietal lobe has associations with sensation in man as in the monkey. Destruction of the posterior part in man produces agnosia apraxia acalculia and defect in writing and reading.

The author concludes that the function of motion in higher mammals has become more corticalized. This is suggested by (1) distinct rather sharply defined localization with stable relations between the periphery and the cortex (2) little or no association of functional correlation between the area striata and its subcortical center the external geniculate body (3) little reparatory disturbances after lesions of the area striata and at least permanence of quadrant and total homonymous hemianopia after extensive lesions of the area striata.

For the sensorimotor functions there is evidence suggesting a of another type of cortical organization (1) a more diffuse localization at least within the large subdivisions of the sensory area (2) within the motor sphere distinct instability and char instability of functional relations between the cortex and the body musculature (3) probably an intimate functional correlation between the cortical region and

its subcortical center the optic thalamus and (4) marked reparation of functional disturbances.

ROBERT ZOLLINGER M D

Bazett H C Alpers B J and Erb W H The Hypothalamus and Temperature Control *A h Neu l & Psychol* 1933 xx 725

The modern literature dealing with temperature control shows a growing tendency to ascribe the main function of the control to the hypothalamus. Hassam found that electrical mechanical or thermal stimulation of the base of the brain between the corpora mamillaria and a point slightly cephalad to the tuber cinereum causes changes in body temperature accompanied by sweating that cooling of this area induces a rise and warming a fall of the rectal temperature. The most sensitive area lies from 1 to 3 mm lateral to the midline. Keller and Hare found that removal of the hypothalamus alone destroys the capacity of cats to control their temperature.

The evidence presented in this report supports the hypothesis of the importance of the hypothalamic region. The brain stem of cats with anterior decerebrations were studied histologically. The animals had the capacity of reacting to cold and regulating the body temperature at a normal level in the absence of the corpus striatum and thalamus. Temperature control appeared to depend upon preservation of the hypothalamus just cephalad to the corpora mamillaria, an area including the nuclei surrounding the walls of the third ventricle and the infundibular nuclei. However the animal in which this part of the brain was preserved failed to show normal hyperpnea when exposed to heat.

DAVID JOHN IMPOSTRO M D

Penfield W and Gage L Cerebral Localization of Epileptic Manifestations *A h Neu l & Psychol* 1933 x 700

The authors have analyzed the pattern of the seizure in seventy five cases of focal epilepsy and have attempted to reproduce these characteristic attacks by direct stimulation of the diseased cortex of conscious patients on the operating table.

They found that the most frequent lateralizing sign is deviation of the head and eyes to the side opposite the hemisphere involved. Seizures which have their origin in the frontal lobe are usually characterized by loss of consciousness (without aura) and turning of the eyes head and body to the opposite side followed by nearly simultaneous convulsion of the opposite extremities falling and generalization of the attack. In seizures which arise in the precentral or postcentral gyrus consciousness is usually lost late. A tingling sensation may follow a Jacksonian march just as movement follows in seizures arising in the frontal lobe. Consciousness is apt to be lost late also in seizures arising anywhere behind the central sulcus and such seizures are of course ushered in by auras. It must be remembered however that a major

attack may leave retrograde amnesia so that the aura is forgotten. Under such circumstances the aura may be remembered only in slight seizures which do not progress to generalization. Seizures originating in the supramarginal gyrus are characterized by a discontinuous twinkling of lights seen in the contralateral field.

An aura of pain or of epigastric distress may arise from activity of the cerebral cortex and cortical stimulation reproduces such sensory phenomena. The buzzing sounds and the dizziness which are characteristic of unilateral temporal lobe seizures have been reproduced by electrical stimulation but the more complicated dream states and odors have never been reproduced perhaps because of the limitation of surgical approach.

Cerebral localization of epileptic manifestations is necessary for the interpretation of convulsive seizures and is of obvious importance in cases in which radical therapeutic measures are indicated.

R. GLEN SPURLING M D

Rowe S N Verified Tumor of the Temporal Lobe A Critical Review of Fifty Two Cases *Arch Neu l & Psychol* 1933 xxx 824

There is no definite syndrome of disease of the temporal lobe. Tumors of the temporal lobes produce a mixture of signs and symptoms due to cortical irritation of the temporal lobe compression of neighboring structures and increased intracranial pressure. Changes in the size and shape of the ventricles and compression destruction of delicate parts of the skull may be caused directly by the pressure of the mass or indirectly by the increased intracranial pressure and may be observed on roentgen examination.

The well recognized symptoms of damage to the temporal cortex—aphasia uncinata attacks and dreamy states—apparently do not occur in a high percentage of cases. Auditory abnormalities were found by the author to be more frequent. They consist in tinnitus auditory hallucinations and impairment of hearing. The visual fields are of great importance in the diagnosis. Epilepsy occurred in 36 per cent of the cases reviewed.

Prominent among the symptoms were mental changes varying from changes of consciousness to mild personality changes. The mental changes do not have a characteristic form and are apparently due largely to increased intracranial pressure.

Signs and symptoms of damage to the motor system as a result of pressure are important in the localization of the tumors. In cases in which the lesion is situated at the base of the lobe pressure on the fifth or the third nerve occurs relatively frequently.

DAVID JOHN IMPOSTRO M D

Deery E M A Further Study of Glioblastoma Multiforme *Bull Neurol* 1933 vii 34

A series of twelve cases of glioblastoma multiforme which came to autopsy and forty surgical specimens



were studied by the author. On the basis of the histological evidence of malignancy the cases were divided into two groups. In the autopsy material radial samples of the tumors from the center out to normal brain tissue were taken and subjected to special histological study. The basic neoplastic elements composing the tumors from the neuro-ectodermal cell to the astrocyte were reviewed.

On the basis of the predominant basic cell type found the tumors were divided into three groups. The least differentiated and most malignant group were characterized by predominance of primitive neuro-ectodermal cells and spongioblasts, the latter with numerous mitoses. The intermediate group of tumors showed predominance of older polar spongioblasts which had for the most part achieved fibril formation. In the most differentiated and least malignant group astrocytic elements predominated.

In the cases of Group 1 the average duration of symptoms was nine and a half months; in those of Group 2 seventeen and a half months; and in those of Group 3 forty three months.

In order to obtain a closer correlation between the pathological diagnosis and the clinical findings Deery urges that the histological index of malignancy of these tumors be given in the diagnosis.

ROBERT ZOLLINGER, M.D.

Keegan, J. J. Chronic Subdural Hematoma: Etiology and Treatment. *Arch. S. & G.* 1933, 71: 69.

The author agrees with Trotter that the bleeding in cases of subdural hematoma comes from torn veins running from the cerebral cortex to the superior longitudinal sinus. He believes that the formation of the blood clots is favored by slight trauma to the head which tears one or more of these vessels but is not sufficient to produce concussion or contusion of the brain with edema, and that more severe trauma, followed by edema which compresses the bleeding points until thrombosis occurs. By this theory it is possible to explain why, in cases of senility in which the brain is atrophied and fallen away from the dura so that the veins are placed under tension insignificant trauma produces hemorrhage more easily than in normal persons and to account for the frequency of pachymeningitis hemorrhagica in psychiatric hospital.

In discussing the treatment Keegan recommends a trial of simple trephination and drainage unless an organized blood clot or some other factor necessitating wider exposure is discovered.

He reports five cases. LEO M. D. and R. M. D.

#### PERIPHERAL NERVES

Gann, E. Late Results of Emergency Nerve Suture. *Estu lontan di n rafi esegut d g nza*. *Ch. d. o. g. d. m. m. to* 1933, 37.

As a rule nerve suture has been rejected by military surgeons as its results have been poor. In the

arm the results have been worse in the median and ulnar nerves than in the radial nerve. In military surgery however conditions are quite different from those in civil practice. War wounds are large and contused very often infected and frequently not operated upon until neuromata have formed on the proximal or distal fragments of the nerves or on both. In civil practice the nerves are generally sectioned by cutting instruments or saws and the wounds are apt to be clean conditions being therefore more favorable for the success of suture.

Koch has advised against suture of the median and ulnar nerves associated with suture of the tendons and ligation of the ulnar artery in extensive wound of the wrist. He says the operation is useless and even harmful as pain results from retraction of the tendons and irritation of the nerves.

The author reports the findings of re-examination of eight patients who were subjected to emergency nerve suture from four to ten years ago. Function was not absolutely restored to normal in any of them but in six it was so nearly complete that the patients can be considered cured. In the two others there was great improvement.

These cases show that nerve regeneration can be brought about by suture if the operation is performed early before a terminal neuroma has formed on the proximal stump. There is no difference in the prognosis of suture of different nerves. Of the cases reported by the author the operation was done on the ulnar nerve in five, on the median nerve in one, on the radial nerve in one, and on both the ulnar and median nerves in one.

Complete cure may be prevented by cicatricial retraction of the surrounding tissues. The results are influenced also by age, being better in young persons than in old persons and by anatomical conditions which favor or retard the reconstruction and protection of the sutured nerve. As examples of the effect of such factors the author cites two cases. In the first there was an extensive wound of the elbow with destruction of bone and in the second a simple incised wound of the forearm. Cure was much more complete in the first than in the second because in the former the nerve lay free in the muscles and did not become involved in the scar, whereas in the latter the underlying bone made it impossible for the nerve to escape involvement in the scar. From these cases it is evident that the most extensive wounds are not necessarily the most unfavorable for recovery.

AUDREY C. MORSE, M.D.

#### SYMPATHETIC NERVES

Ross, J. P. Sympathectomy as An Experiment in Human Physiology. *B. J. S. & G.* 1933, 71: 5.

In the determination of the effects of ganglionectomy one of the most useful methods is thorough investigation of the blood flow through an area. This can be accomplished best by determining skin temperatures with calibrated thermocouples. The patient may be placed in a cabinet with his hands

outline and exposed to a constant temperature of 1 degree C. If the cab net is quickly warmed to 50 degrees C. the arm will show a concomitant increase in vasodilation if they are normal and no increase if their vessels are organically diseased.

In arteries removal of sympathetic control results in marked dilatation with increased blood flow. Some months later there may be a return of vasoconstriction which may be worse than before the operation. This may be due to simultaneous blocking of vasodilators at the time of the operation.

The smaller vessel arterioles and capillaries are controlled by the substance which is liberated by tissue injury. In certain forms of causalgia this substance is liberated to a part through antidromic impulses with ensuing painful sensations, the formation of herpetic vesicles and trophic changes in the skin. Sympathectomy causes a greater blood flow which washes the irritating substance away.

Sympathectomy stops sweating in the skin nearly completely inhibits the pilomotor mechanism and therefore causes definite muscular cramps and gives rise to ocular symptoms (Hirshman's syndrome).

Overactivity of the visceral sympathetic causes inhibition of the viscera, an increase in the tone of its sphincters and consequent stasis of its content. This is believed to be the mechanism in Hirschsprung's disease which is often cured by sympathectomy.

Visceral pains of various types are connected with this system. Some types of pain in the bladder are relieved by section of the presacral nerve. Crural pain impulses pass by way of the sympathetics through the white rami communicantes of the first three and possibly the first five thoracic nerves. In true (angospastic) angina pectoris section of the efferent nerves is followed by relief of pain.

JOHN W. JENKINS, M.D.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Wainwright J M The Treatment of the Bleeding Breast *Am J Cancer* 1933 15 339

Two cases of bleeding breast are reported. In the first case the bleeding occurred for two months in the absence of a demonstrable tumor. Sections of the entire breast disclosed only a diffuse hyperplasia of the epithelium. In the second case hyperplasia of the same type was found but was less marked and occurred in only one area. Local excision in the second case was followed by cancer two years later.

Of eleven cases of malignant disease of the breast with bleeding the bleeding was the first sign noted in eleven.

Bleeding is not sufficient alone to warrant the presumption that the lesion responsible for it is either malignant or benign. Statistically the chances of a malignant or a benign lesion are about even.

The most common benign lesion causing bleeding is duct papilloma.

The author believes that in cases of bleeding of the breast which has occurred continuously or intermittently for a month safety demands removal of the bleeding tissue. If a palpable tumor is found local excision may suffice. If several tumors or a diffuse thickening can be felt or if no tumors can be demonstrated the entire breast should be removed. All cases however treated should be kept under careful observation.

JOSEPH K. NARAT M.D.

Neal M P Malignant Tumors of the Male Breast *Arch Surg* 1933 25 1147

Neal reports a statistical and histopathological study of 60 malignant tumors of the male breast.

The material was found among 117,016 surgical specimens, 9,270 (7.9 per cent) of which were mammary glands. Three hundred and eighty (3.3 per cent) of the mammary glands were from males; the ratio of male to female breasts being therefore 1:29.03.

Of the lesions in the 308 male breasts, 43 (46.42 per cent) were of a non-neoplastic nature and 165 (53.63 per cent) were neoplasms. Of the latter 60 (10.48 per cent) were malignant and 4 (63.6 per cent) were benign.

Of the 60 malignant tumors, 50 (83.33 per cent) were carcinomata and 10 (6.66 per cent) were sarcomata. Of the carcinomata, 8 (16 per cent) were of skin origin and 42 (84 per cent) of duct or acinus origin. Of the sarcomata, 5 (50 per cent) were fibrosarcomata, 1 (10 per cent) was a leiomyosarcoma, 1 a liposarcoma, 1 a lymphosarcoma, 1 a myeloma and 1 a chondromyxosarcoma.

Neal reports a case in which tuberculosis of the male breast was associated with a scirrhous carcinoma.

and a case of generalized carcinomatosis including metastases to the suprarenal glands which caused bronzing of the skin.

The pathological differences between malignant growths of the male and female breasts are differences of degree and ratio of types rather than differences of kind. The growths of the male breast are indistinguishable from similar lesions found more commonly in the female breast. The only difference is a higher incidence of cysts in the breasts of women.

Forty-six and forty-two hundredths of the lesions in the male breast are non-neoplastic processes, 34.09 per cent are benign tumors, 6 per cent are carcinomata and 3.25 per cent are sarcomata. Of the carcinomata of the breasts of both sexes, 1.24 per cent, and of the sarcomata, 10.61 per cent occur in the male. Carcinoma is 80 times more frequent in the female breast than in the male breast, whereas sarcoma is 16 times more frequent in the male breast than in the female breast. In the male breast the ratio of carcinoma to sarcoma is 5:1 and in the female breast 9:1.

The youngest age at which carcinoma was found in the male breast was thirty years and the oldest, eighty-nine years. The average age was fifty-seven years. The corresponding ages for sarcoma were twenty-nine, sixty-two and thirty-nine and seven tenths years.

The author lauds the American College of Surgeons for its standardized requirements for hospitals and laboratories as these will result in better and more extensive diagnoses of tissues and more dependable records.

J. D. TEL. WILLEMS M.D.

Mathew F S The Ten Year Survivors of Radical Mastectomy *J Surg* 1933 10 735

The author reviews the end results obtained by radical mastectomy performed in 115 cases of carcinoma of the breast in the period from 1913 to 1923. Twenty-eight of the patients have survived the operation by from ten to twenty years. The incidence of ten year survival is slightly over 2 per cent.

Mathews says that in spite of all the propaganda with regard to the importance of early treatment it is doubtful whether patients come any earlier for operation today than they did fifteen or twenty years ago.

In the cases he reviews the incidence of carcinoma was slightly lower in women who had borne children than in nulliparae. According to his statistics carcinoma of the breast is no more fatal in young women than in older women.

Of most importance from the standpoint of prognosis is the element of the axillary nodes. Such an element bears no relation to the size of the

tumor. The earlier the case is seen the more difficult a positive diagnosis. In early cases biopsy is necessary to determine the nature of the tumor. Mathews prefers local removal of the mass to incision of the tumor or excision of the entire breast.

In discussing Haagensen's histological grading of cancer of the breast, Mathews states that the grading of tumors with respect to the tumor cells rather than the stroma is of prognostic value.

(DANIEL DELPRAT, M.D.)

## TRACHEA LUNGS AND PLEURA

Conte E. and Costa A. Angiopneumography (La pneumography) *Rad. & Med.* 1933 30:1

In 1931 the authors made a preliminary report on visualization of the vessels of the lung by the injection of radio-opaque solutions into the right side of the heart from whence they enter the pulmonary circulation directly. This procedure was introduced by Forsmann. Early experiments were usually unsuccessful because injection of the then available liquids into the heart usually under some pressure resulted in cardiac collapse and rendered the pulmonary structures only indistinctly visible. However, as the authors believed that direct intracardiac injections should be little more dangerous than intravenous injections, they persisted in their experiments. They used iodine compounds, preferably abrodil. They have devised a special needle which they insert into the basilar vein (either arm and through which a No. 5 ureteral catheter is passed into the heart). The course of the catheter is followed while the patient is on a horizontal fluoroscopic table. When the catheter is in the right auricle the patient is placed in the standing position in front of a vertical fluoroscope and the opaque solution is run in rapidly (in six or seven seconds). The only reaction is a feeling of warmth in the head and chest and occasionally a slight transitory dulling of sensory acuity without after-effects. Typical roentgenograms made by this method are shown and compared with roentgenograms taken by ordinary methods.

The authors believe that the method described is contraindicated in the cases of patients with cardiac disease, especially those with pulmonary complications but is of value when vascular disturbances or anomalies, tumors or cysts are to be considered in the differential diagnosis. (E. F. T. L. & M. D.)

Roles F. C. and Todd C. S. Bronchiectasis *B. M. J.* 1933 4:639

The authors attempt to shed light on the probable prognosis of established cases of bronchiectasis in relation to their response to graded treatments. In a review of 106 proved cases which were under observation for a period ranging from three to six years the total mortality was found to be 51 per cent in those given medical treatment and 30 per cent in those treated surgically. Dry and non-fetid types have a marked tendency to become infected

A definite diagnosis of bronchiectasis can be made only by means of lipiodol injections followed by lateral roentgenograms and ordinary chest roentgenograms.

Lobectomy was regarded as of doubtful value, artificial pneumothorax as only an adjunct to lobectomy, and thoracoplasty as indicated only in advanced unilateral disease.

In cases of strictly lobar lesions, lobectomy is the operation of choice. In 35 cases in which lobectomy was performed by the authors there were only 2 operative deaths. (FRANKLIN I. WALTON, M.D.)

Hayes J. N. and Brown L. Experiments with Oleothorax *J. T. A.* 5:8 1933 111:1

The authors first induced oleothorax in 1906. Since then they have employed it in twenty-nine (about 5 per cent) of their cases of artificial pneumothorax. In some instances it was used to maintain collapse of the lung. By this treatment re-excision was blocked for from one to five years. In three cases tuberculous pus of a milky nature was formed but caused no inconvenience. The best indication for oleothorax is maintenance of collapse of the lung.

Oleothorax is of value in cases of relatively inactive tuberculous empyema or collapse of the pleura. In cases of acute severe tuberculous empyema it is without benefit. In tuberculous empyema of moderate severity in which pus keeps reforming in spite of irrigations oleothorax induced with gomenol oil retard is the process.

The authors prefer not to use oleothorax in the cases of patients with small intermittent bronchopneumonia.

During the injection of the oil the pressure of the supplant gas in the pleural cavity must be carefully controlled. (J. D. H. WILKIN, M.D.)

Pollock W. C. and Skinner R. B. Oleothorax Therapy *J. T. A.* 5:8 1933 111:1

Oleothorax therapy is the introduction of an oil preparation into the intrapleural space for compression of the lung or the disinfection of an empyema cavity. It is indicated definitely in certain complications of artificial pneumothorax. The technique consists of thoracocentesis with the use of a large gauge needle and injection of the oil by the syringe method.

Disinfection, oleothorax is indicated in pneumothorax, inhibition, oleothorax in obliterative pneumothorax and compression oleothorax in unsatisfactory pneumothorax.

Tuberculous empyema complicating artificial pneumothorax is often the result of a small superimposed spontaneous pneumothorax which can be seen on fluoroscopic examination. The spontaneous pneumothorax may be due to the rupture of a subpleural tubercle or the rupture of air cells resulting from the spontaneous rupture of a smaller adhesion. In either event sufficient numbers of tubercle bacilli may be expelled into the pleural space to produce a purulent exudation. As a rule, however, the condition follows cortical tuberculosis.

*Tuberculous empyema usually responds readily to oleothorax therapy induced with 5 per cent gomenolized vegetable oil*

In cases presenting evidence of obliteration of the pneumothorax space in the earlier months of pneumothorax therapy the institution of some type of therapy that will inhibit re-expansion of the lung is necessary. For such cases the authors advocate oleothorax induced with 1 per cent gomenolized paraffin oil.

J DANIEL WILLEMS, M.D.

Gierk L. H. and Crawford B. L. Bronchogenic Carcinoma. *J Thorac Surg* 1933 1: 73

This article reviews a series of fifty cases of bronchogenic carcinoma. The diagnosis was based on the findings of bronchoscopic examination and biopsy. The authors emphasize the importance of distinguishing the truly malignant tumors from the benign endobronchial neoplasms which are frequently confused with adenocarcinoma.

The end results in the cases reviewed show that the prognosis is very unfavorable. Death usually occurs from pulmonary complications. Treatment has been unsatisfactory. Surgical extirpation by lobectomy offers the greatest hope provided the condition can be recognized during an early stage. In none of the cases reviewed was the diagnosis made sufficiently early to warrant lobectomy.

EARL O. LATIMER, M.D.

Grissam E. A. and Singer J. J. Successful Removal of an Entire Lung for Carcinoma of the Bronchus. *J Am Med Ass* 1933 41: 137

The authors report what they believe to be the first successful removal of an entire lung in one stage. The patient had an early squamous cell carcinoma of the bronchus. The diagnosis was made with the aid of the bronchoscope. Removal of the left upper lobe had been advised because of obstruction to the bronchus of that lobe caused by the neoplasm. As at operation it was found impossible to remove only the upper lobe on account of the location of the tumor the entire lung was excised. The patient made a complete recovery and was still well at the time this report was made six months later.

P. CL. W. GREENEY, M.D.

## HEART AND PERICARDIUM

Lervine S. A., Cutler E. C. and Epping R. E. C. Thyroidectomy in the Treatment of Advanced Congestive Heart Failure and Angina Pectoris. *New Engl J Med* 1933 60: 667

Twelve cases of chronic cardiac failure—eight congestive and four anginal and three anginal and congestive—were treated by thyroidectomy. Hyperthyroidism was thought to be absent and in every case the thyroid gland was histologically normal. Of the eight congestive cases the operation was followed by marked improvement in the cardiac condition in three, death in one and slight or no improvement in three. The result in one case is

not known. In the simple anginal case the angina was somewhat relieved. In the three anginal and congestive cases the angina was completely relieved but the congestive failure was only moderately or not at all improved. In the three congestive cases with good results the metabolic rate was lower than in the cases in which the results were less successful. Myxedema requiring thyroid medication developed in two cases.

I. C. STARR, M.D.

## ESOPHAGUS AND MEDIASTINUM

Harrington S. W. Surgical Treatment in Eleven Cases of Mediastinal and Intrathoracic Teratomata. *J Thor Surg* 1933 1: 5

The clinical symptoms, surgical treatment, histological findings and operative results in eleven cases of mediastinal and intrathoracic teratomata are summarized and five cases are reported in detail.

The origin of these tumors has not been definitely proved. The terms applied to them should be based on histological study of the tissues contained in the growth. In ten of the cases reported the tumor originated in the mediastinum and in one case it apparently arose in the right side of the diaphragm. The average age of the patients was thirty-two years. The youngest patient was seventeen and the oldest fifty-nine years old. Seven of the patients were women. The most marked symptoms were dyspnea and cough.

The surgical treatment consisted in posterior thoracotomy and mediastinotomy in seven cases, posterior thoracotomy in one case, posterior thoracotomy and repair of a defect in the diaphragm in one case and anterior mediastinotomy in two cases. In one of which the sternum was split and in the other of which three cartilages and a portion of the corresponding ribs were resected. The remaining case was malignant and inoperable.

Postoperative care of the utmost importance. Particular care should be taken to maintain the blood pressure and relieve any respiratory difficulty. If there has been much loss of blood a transfusion of blood should be given if not an artificial solution. Respiratory difficulty is best relieved by placing the patient in an oxygen cabinet.

In ten of the cases reviewed by the author the operation was followed by recovery. One patient died on the seventh day from cerebral embolism. Nine patients are living and have been completely relieved of their symptoms. One patient died subsequent to operation for a malignant lesion.

The author summarizes as follows:

The most important consideration in the surgical treatment of mediastinal and intrathoracic teratomata are early recognition of the tumor and its immediate surgical removal regardless of the symptoms caused by it.

Delay of operation may result in grave complications such as malignant change or infection in the growth which increase the magnitude of the operation and the operative risk.

The tumor must be removed completely a one stage operation is best

The surgical risk is not great

In benign cases the results are good as a complete cure is obtained if the growth is removed entirely

**Pinoche J** Median Sternotomy as a Method of Approach to the Cervicomediastinal Junction (*La sternotomie médiane s'écoulant au carrefour cervicomédiastinal*) Thèse de Paris Abstr by Gussé *Pres méd* 1933 25 1474

Following a review of the anatomy the author describes the various methods of approach to the cervicomediastinal crossroad These include

- 1 Cervical mediastinotomy without bone resection which is done with Kocher's collar incision
- 2 Mediastinotomies with bone resection but without sternotomy as practiced by Hardenheuer Duval Kocher and von Kuettinger
- 3 Mediastinotomies with sternotomy—the transverse section of Friedrich the total longitudinal section of Milton the cleidotomy of Lambret and the superior longitudinal incision of Sauerbruch

Pinoche uses the procedure of LeFort which belongs to the last group In this method the sternotomy is angular and the supere external angle of the manubrium is detached by L shaped section

The incision of the intercostals of the first space permits sufficient elevation of the detached sternal segment and of the articulating clavicle Injury to the vessels and pleura may be avoided by directing the exposure in the plane of the subhyoid muscle which are inserted low down on the posterior surface of the exposed bony and cartilaginous portions

By this procedure access to the organs may be gained in three different ways as desired An incision of the aponeurosis is along the external margin of the sternocleidohyoid gives access internally to the visceral sheath and externally to the vascular sheath Detachment of the pleura gives access not only to the entire upper half of the mediastinum but also to the lateral surface of the spine and by detachment of the pleural dome to the first intercostal spaces By separating the pleura with the finger at the level of the first intercostal space a transpleural access is obtained to the mediastinal organs the outlines of which can be distinguished through the mediastinal pleura

LeFort's sternotomy has been used hitherto only as a decompression operation The cases in which it is indicated are extremely grave Of five patients operated upon by the author two survived the operation by only a few months and one died on the operating table

EDITH SCHANHEIMER

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Moorhead J J The Relation of Trauma to Hernia *N Y J Surg* 933 cxx 563

The author draws the following conclusions regarding the relation of trauma to hernia

1 Hernia is never caused by injury its development is always preceded by a preformed sac

2 Hernia can be aggravated by injury

3 Immediate disabling pain is the chief symptom This is associated with nausea tenderness swelling and other manifestations

4 Operation usually discloses extrasacculal and intrasacculal adhesions indicating that the process is old

5 Pathological examination of the sac demonstrates chronic peritonitis and fibrosis

6 Hernia is usually a chronic progressive condition a ptosis a diverticulum It is rarely an acute surgical entity

7 A large proportion of males have a hernia and do not know it Surgeons are also unaware of it when treating for contiguous injury grave enough to cause aggravation of the hernia

8 Hernia are subject to periods of augmentation and remission

JOHN J. MALONE, M.D.

D Abreu F A Case of Lipoma of the Mesentery *Bull J Surg* 933 xxi 31

D Abreu states that true lipomata of the mesentery are rare The central areas in a fatty tumor are very liable to undergo necrosis as their blood supply is poor Necrosis is said to give rise to fever chills and pain but in the case reported by the author no febrile symptoms were apparent The author's patient was a man twenty two years of age who was sent to the hospital with a diagnosis of subacute obstruction of the small intestine Removal of the tumor and of about 3 ft of bowel was followed by uneventful recovery

CARL R. STELKE, M.D.

## GASTRO INTESTINAL TRACT

Benassi E Double or Multiple Gastroduodenal Ulceration (Le ulcere gastrico-duodenali multiple) *Radiol med* 933 x 445

Benassi believes that with improvement in the technique of roentgenological examination of the gastro-intestinal tract the diagnosis of multiple gastroduodenal ulcerations will be made more frequently and that a careful search for a second or third niche by the roentgenologist will eliminate the difference between the roentgenological and pathological findings

In about 900 cases of gastroduodenal ulceration there were 65 cases of multiple lesions which could

be recognized roentgenologically In 15 of the latter operation was performed and the diagnosis confirmed

The number of multiple ulcers found by the author has greatly increased since his attention was called to their occurrence The final diagnosis may be made roentgenologically even when the disease has reached the stage at which organs adjoining the gastro-intestinal tract are involved Exact roentgenological diagnosis will explain many complex syndromes

The article contains 27 illustrations supporting the author's opinion on the feasibility of diagnosing multiple gastroduodenal lesions

SAMUEL J. FOGELSON, M.D.

Comroe B I The Association of Pituitary Tumor and Peptic Ulcer *Am J Med Sc* 933 cxxx 583

Following a brief review of the clinical observations of Cushing on the relationship between lesions of the interbrain and peptic ulcer and the experimental work of McLaughlin who produced intestinal ulceration following suprarenal damage in the dog the author reports in detail two cases of pituitary tumor with a complicating peptic ulcer Attention is called to the fact that the literature to date contains no report of a similar case in which the diagnosis was made during life

One of the patients was a young woman in whom a large penetrating duodenal ulcer was demonstrated by laparotomy Posterior gastro-enterostomy was followed by uneventful recovery A diagnosis of pituitary adenoma was made on the basis of a history of amenorrhea an infantile uterus and X-ray visualization of a marked enlargement of the pituitary fossa with widening in the sagittal direction and considerable atrophy of the dorsum sellae

In the second case roentgen ray study of the gastro-intestinal tract disclosed on the lesser curvature of the stomach a lesion suggestive of a large ulcer possibly undergoing malignant degeneration A diagnosis of Rathke's pouch tumor of the pituitary was based on the roentgen demonstration of definite deformity of the sella turcica suggesting chiefly unilateral erosion and also calcium deposits a history of sterility sexual hypofunction slow monotone husky speech partial baldness sparseness of the pubic hair small broad thick fingers and dry brittle nails with numerous longitudinal ridges suggesting beaking

Comroe suggests that these two cases may supply the missing link in the chain of evidence indicating an etiological relationship between peptic ulcer and the endocrine glands and that treatment of early cases of peptic ulcer by the subcutaneous administration of pituitrin might be worth of trial

SAMUEL J. FOGELSON, M.D.

Pauchet V The Treatment of Massive Gastro  
duodenal Hemorrhage (Traitement des hémor-  
ragies gastroduodénales) B H t ném S c d  
ch urgens de Pa 933 t 355

Gastroduodenal hemorrhage is often the cause of quick death and frequently is not diagnosed until after death. When the ulcer responsible involves large blood vessels such as the gastric coronary or pancreaticoduodenal artery the patient may experience a sudden syncope leading to the erroneous diagnosis of angina pectoris.

The treatment of gastroduodenal hemorrhage necessitates first an accurate diagnosis between hemorrhage due to true ulceration and hemorrhage due to a foreign body, malignancy or a blood dyscrasia. In about one third of the cases a definite diagnosis is eliminating other causes of gastrointestinal hemorrhage made. The surgeon then knows that he is treating an organic lesion in the duodenum or the stomach unless gastrojejunal disease is present. Such a definite diagnosis has the advantage of making surgical treatment specific.

In two-thirds of the cases a specific diagnosis is not made and there is no demonstrable organic disease. In such indeterminate cases specific surgery is not indicated. Ligation of a single blood vessel, gastroenterostomy and jejunostomy alone are useless. The author performs a jejunostomy through which the bowel was freed of toxic putrid blood by drop irrigation. In a case cited the patient absorbed 100 liters of water in twenty hours and eliminated all of the putrid blood from the intestines in forty hours. In many of these cases Pauchet performs Judd's pyloroplasty in addition to the jejunostomy for irrigation. Postoperatively this hemorrhage was found to have been controlled previously present dyspepsia.

S M L E J Fox LSO M D

Maes U Boyce F F and McFridgic E M  
The Tragedy of Gastric Carcinoma 4  
S f 933 c 619

In the ten year period from 1922 to 1931 inclusive 758 patients were treated in the New Orleans Charity Hospital for cancer of the stomach. Two hundred and forty-five (32.5 per cent) died in the hospital. Five hundred and thirty-three (70.3 per cent) were not treated surgically, chiefly because they were beyond surgical aid. Of the 25 patients operated upon 97 (77.7 per cent) died in the hospital. It is improbable that any of the 383 who left the hospital without surgical treatment are alive today.

Of the last 200 patients operated upon 90 died in the hospital and of the 110 who left the hospital only 16 could possibly hope for permanent cure. These 100 patients ranged in age from twenty-one to seventy-nine years. The majority were in the sixth decade of life but 3 were under thirty-five years of age and 1 of every 9 was under forty years.

Seventeen of the 200 patients had been a ware of their illness for less than a month and 108 for less than six months. Twenty-five per cent gave a very

typical definite history of gastric ulcer and 29 had been treated for ulcer for varying period of time. In 21 cases the symptoms had been present for two years or more and in 15 for five years which is beyond the period that untreated patients with cancer can be expected to survive. Prominent in the histories were intervals of remission which constitute the essential difference between the ulcer history provoked by an ulcer and the ulcer history signifying cancer. The authors state that while some pathologists question the superimposition of cancer upon ulcer or deny the transition from ulcer to cancer it is difficult to comprehend why chronic irritation within the stomach should not have precisely the same effect as chronic irritation elsewhere.

An X-ray examination of the stomach was made in 163 of the 200 cases reviewed. In 6 it was negative and in 7 it was incorrect. The authors emphasize that an X-ray examination should be made only to confirm clinical suspicion.

No symptom is constantly present in cancer of the stomach and the diagnostic difficulties are greater the earlier the patient seeks medical aid. There is no specific laboratory test for the condition. The safest diagnostic plan is to attribute to cancer until cancer is ruled out any indigestion which develops after middle age acutely or insidiously in a person who has been well previously.

Very often little or nothing can be done surgically after the exploratory operation. Gastroenterostomy is not indicated unless obstruction is present or impending. The ideal operation is gastrectomy but this is rarely possible.

The authors conclude that surgery is justified in cancer of the stomach even in apparently hopeless cases as it offers the possibility of temporary relief if not of permanent cure. JOURN NURSE M D

Gattile E H Eventual Results of Gastric Surgery  
J t M t 1 933 1966

Following a review of the literature on the surgical treatment of gastroduodenal ulceration in which he calls attention to the marked divergence of opinion regarding the type of operation indicated and the variance in the reported end results Gattile reviews the end results obtained in 200 cases as evaluated by an internist who questioned the patients personally and examined them physically and roentgenographically. The pre-operative diagnoses in these cases were as follows:

D i g n o s i s	C a s e s	D i g n o s i s	C a s e s
Duodenal ulcer	6	Carcinoma	7
Gastric ulcer	8	Pyloric stenosis	
Perforated ulcer		Adenocarcinoma of the pylorus	
Perforated ulcer	3	Malignant gastroenterostomy (Malignant)	
Perforated ulcer	3		
Gastrojejunal ulcer	4		

In a large majority of the cases the duration of the pre-operative medical treatment ranged from one to six years. In some acute emergency case (cases of



perforation) medical treatment had been given for fifty years

The types of operation were

Operation	Cases	Operation	Cases
Pyloric gastro-enterostomy	44	Pyloric	3
Anterior gastro-enterostomy	0	Jejunostomy	2
Pyloroplasty	18	Deagastro-enterostomy	2
Resection	7	at anastomosis	2
Fistula	4	Cholecystic gastrostomy	
Closure with posterior gastro-enterostomy	4	Pylorotomy	
Gastro-odenostomy	4	Division of anterior and posterior branches of the vagus	

Ninety five per cent of the patients received immediate relief from pain

On leaving the hospital 80 per cent received full instructions as to hygiene diet and medication 7 per cent received instructions as to diet only and 13 per cent received no instructions

The results of the operation were as follows

Results	Per cent
Complete relief of symptoms after gastro-enterostomy	80
Complete relief of symptoms after all type of operation	72
Maintained improvement with slight occasional disturbance	9
No improvement	9

Attention is called to the fact that 79 per cent of the patients had followed a careful postoperative dietary regime This proves that the emphasis placed by surgeons and internists on the importance of postoperative care and attention to the diet is being heeded A few years ago postoperative regulation of the diet was almost entirely ignored

The author concludes from these cases that gastrojejunal ulceration catastrophic hemorrhage and perforation are rare after gastro-enterostomy and that the substitution of subtotal gastrectomy for this operation and other conservative procedures is not justified

S. M. J. FOGELSON, M.D.

Taylor N. B. Weld C. B. and Harrison G. K.  
Experimental Intestinal Obstruction in the Dog  
*Am. J. Surg.* 1933, 2, 7

In the past ten years a very large amount of experimental work has been done in efforts to solve the problem of acute intestinal obstruction Two main theories of causation of the condition have been advanced According to one the obstruction is of mechanical origin By some investigators it is attributed to the toxin of the Welch bacillus but recent work gives little support to this theory According to others the condition is due to a product of the bacterial decomposition of protein material within the intestinal lumen No theory of obstruction can be accepted which ignores the fact that the severity of the symptoms is related directly to the level of the obstructing lesion At the present time the dechlorination and dehydration theory is most generally accepted Hartwell and Hoguet first called

attention to the fact that animals surviving intestinal obstruction for several days show marked dehydration They concluded that the disturbance in the water balance of the body was due to vomiting and was the factor responsible for the symptoms of obstruction and death Haden and Orr prolonged the lives of their dogs by administering sodium chloride solution intravenously

In an experiment carried out by the authors, a loop of bowel was isolated in the usual manner and closed at one end the other end was brought out through the abdominal wall sutured in position and allowed to drain for varying periods of time up to eight months and at the end of that time the abdomen was re-opened and a small incision made in the loop near its closed end On incubation for forty eight hours in broth and glucose agar a culture of the bowel contents was found sterile Ten days later the abdomen was re-opened the portion of bowel passing through the abdominal wall was resected and the bowel end closed by a pursestring suture and inverted The animal died within sixty hours with the usual signs of obstruction

In a second animal similarly treated the loop was allowed to drain for six months At the end of that time a culture showed the contents of the loop to be sterile Closure of the opening caused death within thirty six hours In subsequent experiments the loop gave sterile cultures after drainage for only two or three months In these experiments also death occurred in from two to four days after closure of the loops Of the total number of dogs five died and two recovered While it is recognized that a conclusive answer cannot be made on the basis of these experiments the findings afford no support to the bacterial theory of intestinal obstruction and suggest that bacteria are not concerned with the production of the symptoms of intestinal obstruction

In another series of experiments carried out by the authors a rubber tube in diameter fastened to a sausage shaped balloon was placed in the bowel the continuity of which was otherwise not disturbed The balloon was then inflated until it caused moderate distention of the bowel wall by a pressure of from 60 to 100 mm Hg In most of the experiments the animal died within twenty four hours with the usual symptoms of intestinal obstruction and necrosis showed the usual findings of that condition The longest survival time was fifty four hours A very close relationship between the degree of distention and the severity of the symptoms was noted In a series of nine dogs thus treated the average survival time was twenty nine hours X-ray examination showed that there was no obstruction of the bowel lumen a barium mixture passed freely through the tube into the portion of the bowel below the distended region In no case did the pressure cause interference with the blood supply of the loop

The authors believe that when the bowel becomes obstructed a certain amount of fluid collects above the obstructed point and moderately distends the bowel wall The distention sets up peristaltic waves

above which travel downward drive the fluid against the block and increase the distention above. The acute distention acts as a stimulus to further secretion and more active peristalsis. In this manner a vicious circle is established.

From the results of their experiments the authors conclude that distention of the bowel wall is the important factor in the production of the symptoms of experimental obstruction. Chloride loss is not in itself a cause of death as animals in which the bowel has been distended die before the occurrence of a significant fall in the blood chlorides and in animals otherwise normal the blood chlorides may be reduced to a low level without causing serious effects.

JOHN W. NUTZUM, M.D.

Pool E. H., Niles W. L. and Martin K. A. Duodenal Stasis. Duodenojejunostomy. *I. S. J.* 933, C 14, 587.

In the authors' opinion chronic duodenal stasis and its surgical treatment have not been given proper consideration by the majority of clinicians. Stasis in the duodenum may cause serious and prolonged symptoms leading to chronic abdominal pain but may be corrected by timely surgery. It may be brought about by fixation, distortion or compression of the first or second portion of the duodenum by bands or adhesions, notably by extension of the hepatoduodenal ligament. There may be a temporary loss of tone with impairment of the function of the duodenum or obstruction at or near the duodenojejunal junction.

The patient complains of indigestion of varying degrees of severity with a sensation of weight in the epigastrium soon after meal which is often attributed to gas on the stomach but is not relieved by belching. Some patients have epigastric distention and soreness beneath the manubrium sterni. Nausea is a common symptom and pain is often very severe. The pain is frequently mistaken for biliary colic and may require morphine. The pain and vomiting may last for several hours or days and may suggest acute intestinal obstruction. Some patients are relieved by the recumbent or knee-chest position. Headaches and faintness are common. The symptoms may have persisted over a number of years or may have developed suddenly. The condition occurs most frequently in persons of the hyposthenic type and visceroprotosis may be revealed by X-ray examination. The fluoroscopic examination of the duodenum necessary for diagnosis demands expert technique.

The authors emphasize that it is neither wise nor necessary to operate on all patients with duodenal stasis. The decision as to operate requires careful thought and consideration of the patient's nervous and psychic status. Operation should not be undertaken before a careful medical regime has been tried and has failed to relieve the symptom. It has been commonly noted that the only cases helped by medical treatment are those with a short history of indigestion and very moderate stasis.

The surgical treatment usually consists in the freeing of bands or constricting adhesions. For obstruction at the terminal portion of the duodenum duodenojejunostomy is indicated. This operation is safe and gives good results.

In a period of nine years Pool has operated on eleven carefully selected cases. In seven the result was excellent in two fair and in two doubtful. There were no deaths.

JOHN W. NUTZUM, M.D.

Costello C. D. Duodenal Diverticula. *B. J. J. Rad.* 1, 933, 57.

Diverticulum of the duodenum described in 1710 by Chomel was first reported to have been recognized roentgenographically in 1913 by Case.

For purposes of classification Odgers has divided the lesions found into three groups, namely, primary lesions, secondary lesions and lesions associated with the major papilla.

The primary lesions are flask-shaped protrusions of the mucosa and submucosa through a definite defect in the muscular wall of the bowel. They are confined almost exclusively to the inner border of the second, third and fourth portions of the duodenum and possibly are due to dystopia of the adjacent pancreatic tissue. They probably occur early in life but become larger and more manifest after middle age.

The secondary lesions possess a complete muscular coat and are situated almost exclusively in the first portion of the duodenum. They may be of the traction or pulsion variety. Those of the traction variety are due to the contraction of periduodenal or perigastric adhesions over the sites of duodenal or gastric ulcer. Those of the pulsion variety are due to stretching of scar tissue pouching in the region of an ulcer scar or pouching due to redundancy of the normal duodenum at a point opposite a contracted chronic ulcer.

In the lesions associated with the major papilla the papilla of Vater is situated at the bottom of a small diverticulum or the diverticulum may consist of a dilatation of the ampulla of Vater itself. Lesions of this type are probably due to a congenital anomaly.

In 1932 Horton and Mueller reported that duodenal diverticula were found in 2.8 per cent of the postmortem material at the Mayo Clinic. Andrews found them in 1.2 per cent of 2,000 X-ray examinations and Lockwood in 1.7 per cent of the routine gastrointestinal X-ray examinations carried out in his clinic. The incidence based on X-ray examination obviously depends on the care with which the lesion is sought. According to Odgers the ratio of duodenal diverticula in males and females is 4:7.

The author agrees with the generally accepted theory that uncomplicated primary diverticula are of no clinical importance. Secondary diverticula are always significant as they are indicative of a previous pathological lesion which may be reactivated or may have produced other complications. Regardless of the type any diverticulum

gains clinical significance when it becomes the site of or gives rise to a secondary pathological change. Diverticulitis and peridiverticulitis are common in the colon but inflammatory change in and around duodenal diverticula are comparatively rare. Calculus formation is not common but Harns reports finding a pure cholesterol stone in a diverticulum. Torsion and strangulation of a pedunculated diverticulum are possibilities but no cases have thus far been reported. Malignant degeneration may occur but most of the recorded cases were cases of carcinoma of the duodenum which produced an appearance simulating diverticula. By causing pressure on neighboring structures diverticula of the duodenum may give rise to secondary pathological changes in the bile ducts, pancreatic duct, adjacent portions of the duodenum and important blood vessels. Diverticulitis and pressure effects on the bile and pancreatic ducts give the disease its clinical importance.

When marked pre-sure symptoms are present surgical treatment is indicated. Diverticulitis and peridiverticulitis are best treated medically. The type of treatment to be employed in cases of secondary diverticula is best determined by consideration of the pathological process which produced the diverticulum.

The author a radiologist reports six cases in which the diagnosis was made by X-ray examination. He presents the following diagnostic observations:

1. The shadow of the diverticulum is distinct from that of the duodenum and is usually round and smooth in filling and outline.

2. Under the fluoroscope a connection can usually be demonstrated between the two structures by emptying the diverticulum into the duodenum by palpation.

3. Barium is often retained in the diverticulum for several days after the duodenum has been emptied.

4. Tenderness over the diverticulum on fluoroscopy should suggest the diagnosis of diverticulitis or peridiverticulitis.

The author states that frequently the lesions will be missed on fluoroscopic examination unless adequate care is exercised in inspecting the second, third and fourth portions of the duodenum with the patient in the erect and recumbent positions.

ARTHUR S. W. TOLSON, M.D.

Allan A. W. and Benedict E. B. Acute Massive Hemorrhage from Duodenal Ulcer. *J. Surg.* 1933, 30.

In the past twenty years 1803 cases of duodenal ulcer were treated in the ward of the Massachusetts General Hospital. In 68 there was a history of gross bleeding or bleeding occurred in amounts recognizable by macroscopic study while the patient was under observation. In 16 cases the patient was classified as a moderate bleeder as sufficient blood loss had taken place to reduce the red blood cells

to 3,000,000 and the hemoglobin to below 5 per cent. In 200 cases the bleeding was severe enough to produce a marked secondary anemia.

This discussion is limited to the cases of acute massive hemorrhage. These are divided into 62 cases in which bleeding occurred gradually over a period of weeks and 138 cases (12 per cent) in which the hemorrhage occurred sufficiently suddenly to cause prostration, shock and marked anemia. Of the 138 patients with sudden hemorrhage 112 died to death without operative interference and 26 were operated upon in a depleted state without success. The mortality in this group of sudden severe massive hemorrhage was 14.5 per cent.

In nearly every fatal case it was possible to demonstrate erosion of a large vessel at operation or autopsy.

At operation the identity of vessels is so obscured by the surrounding inflammatory reaction that one can only hope to intercept the vessels as the ulcer above the ulcer is divided. Erosion into the pancreas may have extended sufficiently deep to expose an accessory pancreatic duct and this in itself may play an important rôle in the further development of the eroded vessels and in the treatment of the ulcer.

A most striking differential point between cases of apparently the same severity on admission to the hospital in which bleeding ceased spontaneously or had a fatal termination is the average age. In the fatal cases reviewed the average age was fifty-six and three tenths years and in the cases with recovery it was forty-one and eight tenths years.

In an effort to define the type of severe massive hemorrhage that must be considered as possibly fatal the authors state that in 25 cases with recovery the bleeding which occurred while the patient was in the hospital was sufficiently alarming to place them in this class. The average age in these 25 cases was forty-three and five tenths years. Only 2 of the patients were beyond the average age in the fatal cases and in the entire group of 138 patients recovering from sudden severe hemorrhage there were only 4 beyond the average age in the fatal group.

Gross bleeding in duodenal ulcer is recognized as one of the chief indications for surgery.

Severe massive hemorrhage from a known or strongly suspected duodenal ulcer at the time the patient enters the hospital should be considered potentially fatal. Depending on the age of the patient and the severity of the bleeding it is usually possible within a few hours to determine whether or not recovery may be expected. Patients not rapidly improving and those with repeated attacks of syncope, hematemeia and melena should be carefully transfused. If they continue to bleed a large transfusion should be given and operation should be performed immediately.

Everything should be ready for transfusion. Either matched citrated blood should be on hand or a donor should be available in the hospital. Blood



while the amount of blood flowing through the omentopexy was greatly diminished.

The survival of the control animals in which first stenosis and later complete occlusion of the portal vein was brought about without omentopexy confirms the authors' theory of the minor rôle played by the Talma omentopexy in cases of portal occlusion.

PETER A. ROSE, M.D.

Parino A. Hepatosplenography (L'epatopleografía). *Radiol med* 933 xx o

This article is based on twenty-three cases—nine cases of neoplasm, three of cirrhotic lesions of the liver, two of acute inflammatory hepatic lesions, two of lymphogranulomatous lesions, three of myeloid leukaemia, one of the infundibulohypophyseal syndrome, and three of enlargement of the liver and spleen without definite diagnostic data. The opaque medium employed was a colloidal solution of thorium dioxide. The observations were continued over a long period of time, in some instances as long as seventeen months.

While there were no clinical symptoms of any sort and laboratory tests revealed no change from the normal which suggested immediate damage to the blood of the organs of fixation or elimination, the author does not feel justified in concluding definitely that the diagnostic procedure used is harmless, as there is a possibility of late lesions from the action of the thorium dioxide as foreign substance or from its radio-active action, even though the latter is admitted to be very feeble. He therefore recommends it only for cases with an unfavorable prognosis and urges that it be studied further in experiments on animals with special regard to the late effects of the thorium dioxide.

JAMES T. CASE, M.D.

Twiss J. R. and Killian J. A. Diagnostic Methods and Metabolic Studies in Disease of the Biliary Tract. I. Description of Routine Examination and Discussion of Normal Standards. *Am J M S* 1933 clx 748

The authors investigated 3,000 biliary drainages by the Lyon technique in the cases of 500 patients. On the basis of the results in these cases and the findings in the cases of 20 normal persons and 30 patients with a presumably normal biliary tract who had mild attacks of gastro-intestinal symptoms, the authors attempted to define the criteria of normal function of the biliary tract.

They state that the history should be taken carefully, although it may be suggestive of biliary disease when the biliary tract is normal. The physical examination is of limited value and even a thorough roentgenographic study is not always reliable. Biliary drainage by the Lyon technique should show the characteristic A, B, and C bile macroscopically free from cholesterol crystals and calcium bilirubin pigment. However, the authors point out that in one normal case occasional cholesterol crystals were found in the concentrated bile from the gall bladder. On chemical analysis cholesterol is found

in A, B, and C bile. The quantities are minute in A and C bile and distinctly larger in B bile. The roentgen index should show less than 8 units and the direct van den Bergh test should be negative. Bile acids are apparently not present in normal bile, but should be present in gall bladder bile in a concentration from 4 to 7 times that in duodenal bile. Bacteriological cultures of all types of bile should show no growth.

STANLEY H. MENTRE, M.D.

Masciottra R. L. and Etcheverry M. A. Internal Biliary Fistulae and Calculous Obstructions of the Gastrointestinal Tract (Fístulas biliares intra y biliaris calculosas del tracto gastrointestinal). *Rev med-q. ru g de pat f m* 933 234

The authors report three cases of cholecystopyloric fistula and two of cholecystoduodenal fistula. In both of the latter calculous lesions occurred. In one the diagnosis of cholecystoduodenal fistula was made by roentgenographic examination before operation. In the other the fistula persisted for three years after operation although the patient was free from abdominal symptoms.

In 1932 the literature contained the reports of only forty-two cases of internal biliary fistula diagnosed roentgenographically. The authors' case is the first to be reported in the Argentine literature. Of the four other cases reported by the authors the pre-operative diagnosis was transgressed: umbilical hernia in one, stone in the common duct in one, and tumor of the pylorus in two.

In discussing the roentgenological diagnosis the authors state that the isolated demonstration of barium in the biliary tract does not always mean an internal biliary fistula, neither is the presence of gas or air in the gall bladder pathognomonic, as pneumocholecystitis must be excluded. In the latter condition a level surface of the fluid in the gall bladder and infiltration of the walls with gas are important signs which are absent in cases of biliary fistula.

The authors discuss at length the advantages and disadvantages of enterostomy for drainage of the pyloric loop in biliary ileus. In the Argentine this operation has not been performed in the majority of cases, and the mortality in Argentine cases appears to be lower than the mortality in cases reported from other countries in which enterotomy was done.

The article contains roentgenograms and photomicrographs and a brief summary of the cases of internal biliary fistula which were diagnosed roentgenographically.

M. E. MONTES, M.D.

Santý P. Mallet Guy P. and Brechet A. Pyloroduodenal Stenosis of Biliary Origin. Biliary Type Cholecystoduodenal Fistula with Impaction of a Calculus (La stenose pyloroduodenale du type biliaire avec impaction d'un calcul biliaire type B). *Rev. Físt. cholecystoduodenale calculaire* 93 93 xxxix 978

The authors discuss only the pyloric obstruction which results from the migration of gall stones into

the duodenum through an enterobiliary fistula. Knowledge of this condition dates back to the report by Van Swieten and Morgagni of a case in which gall stones were vomited. Subsequently Liron reported the case of a patient who had vomited two calculi subsequent to showing the syndrome of pyloric scirrhus. The earliest pathological descriptions of pyloroduodenal fistulae were published by the elder Duplay in 1833 and by Bonnet in 1841. The first complete description of the syndrome discussed in this article was that of Bouveret. Bouveret's patient was a woman whose condition was diagnosed as pyloric stenosis due to adhesion between the pylorus and the gall bladder. At operation performed by Poncet the pylorus and gall bladder were found enveloped by dense adhesion and a hard mass supposedly a carcinoma was felt in the region of the pylorus. On exploration by gastrotomy the tumor was discovered to be a large gall stone which had become firmly impacted in the duodenum through a cholecystoduodenal fistula.

In the treatment of the condition Tuffier and Marchais limited operation to the section of adhesions and gastro-enterostomy. More recently there has been a tendency to attack the lesions directly by radical operation (Cotte 1907).

Obstruction of the duodenum by calculi was for a long period regarded as a curiosity but with the accumulation of about thirty cases the condition has been demonstrated to be a well defined pathological entity. The principal features are dilatation of the

stomach, cholecystoduodenal fistula, impaction of a calculus in the stoma or the duodenum and occasionally a true stenosis of the duodenum.

The fistula is usually formed directly by a gall stone ulcerating through the fused walls of the gall bladder and bowel. Occasionally however there is an intermediate perivesical abscess which points and ruptures into the duodenum. The fistula is always situated in the middle of the first portion on either the superior or the posterior wall.

The clinical manifestations of Bouveret's lesion are not at all distinct and only the roentgenological signs are of much aid in the diagnosis. The latter were first studied by Brocq and by Brodin and Aimé (1920). They consist of (1) dilatation of the duodenal bulb, (2) a lacunar image of the bulb due to the presence of the calculus and (3) the shadow of the fistula.

In the treatment of these lesions there are three possible courses of action: (1) gastro-enterostomy, (2) removal of the calculus and (3) radical treatment of the fistula. Gastro-enterostomy is valuable as a preliminary operation when the patient is in a precarious condition or as a supplement to the other procedures. It should probably be performed in most of the cases. When a Jaboulay button is employed little or nothing is added to the risk of the operation. When feasible radical treatment of the fistula is the procedure of choice. The gall bladder may be drained or removed.

ALBERT F. DE GROOT, M.D.

# GYNECOLOGY

## UTERUS

T Linde R W Cancer Like Lesions of the Uterine Cervix *J Am Med Ass* 1933 101:1211

The author reports a histological study of cancer like lesions which were discovered in the routine examination of twenty four specimens of cervical tissue received in the Gynecological Pathological Laboratory of the Johns Hopkins Hospital Baltimore. The tissue was removed in the following operations: simple twisting off of cervical polyps twelve cases; trachelorrhaphy three cases; amputation of the cervix one case; biopsy one case; curettage one case; and panhysterectomy for cancer like lesions six cases.

The twenty four women were followed for from one to ten years. None of them subsequently developed carcinoma of the cervix. In the cases in which and several sections studied from each block. No unmistakable cancer was found in the same cervix and no continuity between cancer like lesions and true cancer was observed.

In the vast majority of cases these cancer like but benign lesions are readily differentiated from early carcinoma if the pathologist is cognizant of their occurrence.

The carcinoma like tissue may suggest epidermoid carcinoma or adenocarcinoma but more frequently resembles the former. Under low magnification the tissue suggesting epidermoid carcinoma shows solid strands of cells deep in the stroma and in places apparently isolated from the surface epithelium. The general pattern of growth is extremely irregular. Magnification sufficient for a study of the character of the individual cell shows several pyknotic nuclei scattered through the epithelium but no large hyperchromatic nuclei or mitotic figures. On serial section several isolated epithelial areas may be found continuous with the surface epithelium. Failure to establish continuity does not indicate malignancy as inflammation and resulting fibrosis may isolate strands of benign epithelium from the parent surface layer. Marked infiltration with the round cells indicating inflammation is the invariant accompaniment of the irregular proliferation. Downgrowth of squamous epithelium frequently follows a glandular lumen and often takes place beneath the columnar epithelium of the gland.

When the tissue suggests adenocarcinoma the pattern is formed by squamous metaplasia of the cells lining the glands and is often seen beneath the surface epithelium. Under high magnification the process may be recognized as simply another form of the process of epidermization already described. The normal columnar epithelium lining cervical

glands has been replaced by epithelium resembling the squamous type. Careful examination of the individual cells fail to reveal hyperchromatic nuclei or clear mitoses.

Malignancy is suggested by irregularities in size, shape and staining qualities. Retention of the normal differentiation of cells in squamous epithelium into the basal transitional and spinal layers is against malignancy. However its absence does not indicate malignancy as this differentiation is often wanting in the squamous epithelium formed by the process of epidermization. Hyperchromatic nuclei are suggestive of malignancy and mitotic figures in the cervical epithelium are of great significance. The presence of both establishes a diagnosis of malignancy.

The author believes that the essential factor in the production of the carcinoma like microscopic pictures described is inflammation. He has never seen such pictures except in the presence of demonstrable infection. He states that although the lesions are cancer like there is no true evidence that they are precancerous and there is no justification for radical surgery based solely on the presence of such lesions. When doubt exists after examination of biopsy specimens by a competent pathologist the patient should be kept under close observation and a second biopsy should be carried out if necessary. In the author's opinion there is as yet no recognized microscopic picture in the cervix which can be interpreted as representing a transition between a benign and a malignant change. ROBERT M. GARR, M.D.

Curtis A H. Coincident Surgical Exposure and Radium Therapy in the Treatment of Extensive Cervical Cancer. *Am J Obst & G* 1933 21:1 569

The author treats the necrotic cervical growth by surgical diathermy or prophylactic irradiation at least three weeks prior to operation but states that preliminary deep X-ray therapy may serve equally well in healing the slow healing cancerous surface.

When the surface has become free from necrosis and infection a pelvic examination is made under anesthesia to determine the extent of the growth. Surgical exposure of the cancer bearing uterus and adjacent cellular tissues is then undertaken. The bladder is mobilized upward by blunt dissection. The cervix encircled by an incision such as that made for radical vaginal hysterectomy and the vaginal mucosa carefully dissected laterally and posteriorly along the natural lines of cleavage. The body of the uterus and the regions of the broad ligaments and cardinal ligaments are then well visualized. With the organ half delivered broadside vaginally the bladder safely anchored in its elevated position with a catgut

suture holding it high on the uterus and the paracervical tissue exposed a massive radium treatment is possible. Radium needles or radon seeds are inserted near to into or at a distance from the cervix as indicated with assurance of safety of the adjacent vulnerable organs.

The immediate results in three cases are reported. All of the patients made a good recovery from the procedure. It is too early to report the final results.

EDWARD L. CORNELL, M.D.

#### ADNEXAL AND PERIUTERINE CONDITIONS

Bonnet L. Surgical Treatment of Tubal Sterility

(Traitement chirurgical de l'infertilité tubaire)

Bull et mém. Soc. d'obst. g. et p. 1933, 1, 399

The most common cause of sterility is occlusion of the fallopian tubes. The incidence of sterility due to this condition ranges from 55 to 65 per cent. During the past ten years two methods of tubal exploration have been employed: (1) tubal infestation and (2) salpingography. The first being the simplest should be done first. If the tube is found blocked the second procedure should be used to complete the examination.

Both of these procedures may in themselves prove excellent means of treatment, being often followed by pregnancy.

If the tubes are demonstrated to be impermeable to gas or lipiodol recourse must be had to surgical measures. These are classified according to the site of the lesion as follows:

1. At the fimbriated end of the tube
  - a. Salpingolysis which consists in freeing the fimbriae and peritubal adhesions. This operation was first mentioned in 1914 in a case report by Gouilloud.
  - b. Salpingostomy in which a new orifice is made at the distal end of the tube.
2. In the mid portion of the tube
  - a. Salpingoplasty (operation of Vidal). In this procedure the tube is incised longitudinally and then sutured transversely.
  - b. Resection of the stenosed portion followed by end to end suture.
3. In the intramural portion of the tube
  - a. Implantation of the tube into the uterus after resection of the first segment.
  - b. Ovarian grafts. These are employed when extensive bilateral lesions necessitate total salpingectomy. They may be homografts or autografts. There are several methods of using autografts: free grafts or pedunculated grafts may be implanted in the interior or into the cornua of the uterus.

The author's experience and the reports in the literature show that any of these procedures may be followed by pregnancy if the cases in which they are used are properly studied and elected.

MARSH W. POOLE, M.D.

Rochat R. L. Treatment of Utero Adnexal Tuberculosis (Traitement de la tuberculose utéro-annexielle). Gyn. et Obst. 1933, 1, 20.

During the past thirty years the treatment of utero adnexal tuberculosis has become increasingly more individualized. The modern treatment includes three methods: surgery, heliotherapy, and radiotherapy. Each of these methods may result in cure, but as a rule all three must be employed. When the lesion is localized to the genital organs the best results are obtained by surgery. Heliotherapy is the treatment of choice when the process has extended beyond the adnexa and involves the peritoneum. It has the advantage of rendering in operable cases suitable for operation. Hygienic and dietetic measures must be included in any form of treatment.

HAROLD C. MACK, M.D.

Lilina J. P. Investigation and Study of the First Day Theories of Ovarian Histophysiology (Investigación y estudio sobre la fisiología de la primera fase ovárica). Arch. de Obst. y Gyn. 1933, 1, 129.

The author describes in detail the histological structure of the ovary and traces the changes in the genital tract and the mammary gland coincident with maturation and rupture of the graafian follicle and the formation and degeneration of the corpus luteum.

He believes that the presence of the mature follicle in the ovary is responsible for the series of changes in the organism which tend to facilitate coitus and fecundation and create a special state of libido varying in degree according to the species. These phenomena are due to the action of the active principle of the follicular fluid, folliculin, considered as a product of internal secretion.

Ovulation may be spontaneous or provoked. In mammals with the exception of woman and certain anthropoids, ovulation is provoked by coitus and takes place only during the state of libido when the follicles are ready to rupture. The underlying cause of rupture of the follicle is the genetic excitation provoked by coitus or in some cases produced artificially.

In woman although ovulation is spontaneous and occurs periodically, coitus may nevertheless bring about rupture of the mature follicle.

The evolution of the corpus luteum depends on whether pregnancy occurs or not. In any case it is divided into two stages: (1) an anabolic stage or stage of development which in woman lasts twelve days in the corpus luteum of menstruation and from three to four months in the corpus luteum of pregnancy; and (2) a catabolic stage or stage of regression which in pregnancy lasts until delivery.

During the anabolic stage of the corpus luteum certain changes take place in the genital organs which tend to favor the reception and implantation and nutrition of the fertilized ovum.

During the catabolic stage of the corpus luteum all of the changes in the genital organs disappear.



and the organs return to normal. This regression occurs rather suddenly and in woman and certain anthropoids is responsible for the menstrual flow due to the shedding of the congested mucosa.

During the first half of pregnancy the corpus luteum determines the maintenance of the ovum *in situ* and prevents its resorption. It acts also on the mammary gland causing it to enlarge. After the fourth month it prevents maturation of other follicles.

The author believes that there is a luteinic hormone although by many this is denied.

The interstitial gland does not exist in the human ovary and its relation to the genetic life of the animal possessing it is very indefinite. A parallelism has been found only between its development on the one hand and the weight and age of the animal on the other.

W. H. MARTINE, M.D.

Plate W. P. A. Ra. Form of Folliculoma of the Ovary, the Folliculoma Lipidique of Lecene (Un. France, 1910). Lecene's folliculoma of the ovary (Un. France, 1910). Lecene's folliculoma of the ovary (Un. France, 1910). Lecene's folliculoma of the ovary (Un. France, 1910).

The author describes in detail a very unusual tumor of the ovary which belongs to the granulosa tumors and has been designated as a folliculoma and an oophoroma.

The patient was twenty three years old. Pelvic examination revealed a tumor of the left ovary, the size of an orange. Two years previously curettage was done for metrorrhagia and the scrapings showed hyperplasia of the endometrium. After the curettage menstruation became irregular and then suddenly stopped.

At the time of the operation for the ovarian tumor amenorrhea had been present for seven months, the breasts were enlarged and congested and colostrum could be obtained, but the patient was not pregnant.

After the operation, which consisted in removal of the tumor—the uterus, both tubes and the right ovary—were found normal—menstruation became regular and the colostrum disappeared from the breasts.

Histological examination of the tumor by the author in collaboration with Moulouquet of Paris and a large number of pathologists outside of France produced the neoplasm to be a folliculoma rich in fat and lipoids which was identical with the tumor described by Lecene as folliculoma lipidique. Only two other tumors of this kind have been reported in the world literature. Both were described by Lecene, the first in 1910 and the second in 1927.

The author discusses the differential diagnosis of such tumors especially from hypernephromata and leucomata of the ovary.

The development of the folliculoma causes hyperplasia of the endometrium which results in irregularity of menstruation. For some reason the tumor luteinizes itself and the luteinized cells exert the same activity as lutein cells and produce a condition

similar to pregnancy with amenorrhea engorgement of the breasts and colostrum.

As soon as the tumor is removed the hormonal action ceases, the state of pseudopregnancy disappears and menstruation becomes regular.

ISAAC ANDREWS, M.D.

Novak E. and Long J. H. Ovarian Tumors Associated with Secondary Sex Changes. Granulosa Cell Carcinoma and Arrhenblastoma. J. A. M. A. 1933, 101, 7.

In the past few years a new chapter in gynecological pathology has been written in the description of a group of ovarian tumors capable of producing profound effects on the sex characters.

The classification and naming of ovarian tumors have been difficult because of uncertainty regarding the histogenesis of the neoplasms.

Granulosa cell tumors arise from early oophorogenic structures in the sex gland area. During fetal development two types of sex-cell develop—one and follicular epithelial. The latter group themselves around the egg cells to form the primordial follicles. In the process rests of granulosa cells may be left from which granulosa cell tumors arise.

The granulosa cell is a typically feminine cell producing the so-called female sex hormone, folliculin or theelin. The hormonal effects produced by granulosa cell tumors are along the lines of feminization with overaccentuation of certain female sex characters and functions.

Granulosa cell tumors may occur at any age but are most common after the menopause. When they arise in elderly women they produce a most remarkable effect on the uterus through the endocrine action of the granulosa elements. The uterus becomes characteristically increased in size and pseudomenstrual bleeding occurs. This sequence must therefore be kept in mind as a possible explanation of postmenopausal hemorrhage. If for example, diagnostic curetting in such cases shows no suggestion of malignancy, but reveals a typical hyperplasia of the endometrium, the first thought should be of a granulosa-cell tumor of the ovary. The hyperplasia in such cases is due unquestionably to the excessive production of folliculin by the granulosa cells just as hyperplasia in women of the reproduction age is due to hyperfolliculism.

In at least a few cases granulosa-cell tumors have occurred in young children. In the young the hyperfeminizing influence of the neoplasms is manifested by precocious puberty and menstruation together with such secondary changes as mammary hypertrophy, the growth of genital and axillary hair, increased growth of the body, the development of the typical feminine postpubertal contour and an increase in the size of the uterus to or almost to the pubertal size.

Granulosa-cell tumors are common, unilateral. They vary in size from that of a cherry nut to that of a grape fruit. Their surface is smooth but they may be somewhat lobulated. On section the art

found to be soft and sometimes granular. Frequently they show gelatinous areas. Especially when they are large cystic cavities, sometimes small and sometimes quite large, are seen.

Arrhenoblastomata are a less common group of ovarian tumors which produce effects diametrically opposite to those of granulosa cell tumors, since they have a defeminizing or a masculinizing influence. These effects are believed to be due to the origin of the tumors from certain undifferentiated cells in the region of the rete ovarii, the female homologue of the testis.

The clinical manifestations of arrhenoblastomata vary according to the degree of the masculinizing hormonal influence and the latter appears to be a reflection of the degree of undifferentiation of the tumor cells. In the most extreme cases the woman who has previously been of a normal feminine type becomes amenorrheic, the breasts flatten and atrophy, a heavy growth of hair appears on the face, chest, abdomen and lower extremities, the figure loses its normal feminine curves and assumes the typically more angular contour of the male; the voice becomes much deeper because of laryngeal hypertrophy, and the clitoris may show such hypertrophy as to be almost penile in its proportions. Removal of the tumor leads to regression of the symptoms.

The tumors are usually unilateral and like most neoplasms of this embryonic group are of a relatively low degree of malignancy. They are commonly of moderate size and lobulated, soft and on section yellowish.

As the microscopic pattern is variable, they were formerly classified as sarcomata, carcinomata or endotheliomata. Careful study of sections will sometimes reveal a tubular or strand-like arrangement of the cells suggesting sex cords of early gonadal development.

CHARLES F. DUBOIS, M.D.

Spencer, H. R. A Review of 653 Ovariotomies. *Proc. Roy. Soc. Med.* L, no. 933, 1935, 435.

All of the specimens removed in the 653 ovariotomies reviewed by the author were examined macroscopically and microscopically. Sixty-three of the tumors complicated pregnancy, 1 before or the puerperium. Of these 23 were operated upon during pregnancy or labor. Spencer says that caesarean section is inferior to simple ovariotomy in the treatment of ovarian tumors in advanced pregnancy and labor and superior to simple ovariotomy in the treatment of para-ovarian tumors in advanced pregnancy, because of the danger of thrombosis and embolism.

Adhesions were present in over 65 per cent of the cases reviewed and torsion of the pedicle occurred in 11 per cent. Tapping of 12 tumors before operation was followed by the formation of adhesions in 11 cases and by suppuration in 1 case.

The ovarian tumors were of the following types: papillomatous ovarian cysts 33, dermoids 66, fibroids 20, para-ovarian tumors 45, and suppurat-

ing tumors 58. Of the 67 malignant tumors, 66 were malignant ovarian tumors and 1 was a benign unilocular cyst with cancer of the body of the uterus. Fifty-eight were carcinomata, 6 were sarcomata and 2 were endotheliomata.

The patients remained in bed for twenty-one days and were not discharged before the twenty-fourth postoperative day. Thirty-five (53 per cent) died after the operation while they were in the hospital.

On the basis of his experience the author advocates the removal of all benign ovarian tumors, however adherent, and whether they are papillomatous or smooth, and the removal of malignant tumor even in the presence of secondary growths, provided the patient's condition will allow it.

Alice F. Maxwell, M.D.

### MISCELLANEOUS

Novak, E. Gynecological Aspects of Endocrinology. *B. M. J.* 1933, xv, 5.

In 1917 interest in the physiology of reproduction as stimulated by the discovery of the vaginal smear method for the chronological study of the sex cycle in laboratory animal. The work of Frank, Allen and Doisy and many others on the ovarian follicle hormone that of Corner and Allen on the hormone of the corpus luteum, that of Smith and Fingle and of Aschheim and Zondek on the function of the anterior lobe of the pituitary gland represent marked advances in our knowledge of the gynecological aspects of endocrinology.

It is now universally recognized that the ovary produces two distinct hormones. One of them is folliculin (often the lin menformon), the characteristic hormone of the active graafian follicle. During the process of maturation of the follicles a steadily increasing amount of folliculin is secreted. This produces in both the endometrium and the musculature of the uterus two main effects, namely, hyperaemia and growth. With rupture of the follicle the corpus luteum phase of the cycle begins. During its period of activity the corpus luteum produces two hormones, folliculin and progesterin. The latter, its own characteristic hormone, is responsible for the secretory activity of the glandular epithelium.

Another important problem related to endocrinology is the relationship between ovulation and menstruation. The author believes, though he cannot yet produce the evidence, that menstruation can occur in the human female as in the monkey without ovulation. Under such circumstances the woman is sterile but may be otherwise normal.

With reference to the hormonal mechanism involved in menstruation, Novak states that menstrual bleeding is preceded by retrogression of the corpus luteum, a structure which appears to protect the endometrium. So long as the corpus luteum is thriving and functioning, the endometrial development advances so that in the case of the corpus

luteum of pregnancy the pregravid endometrium passes by an easy transition into the decidua. After retrogression or excision of the corpus luteum the endometrium degenerates, is cast off in considerable part and bleeding begins. Removal of the growing follicle also results in bleeding. As the follicle contains only folliculin the bleeding is determined apparently by the removal of this hormone. The bleeding after corpus luteum excision or regression is readily explained by the now demonstrated fact that the corpus luteum produces folliculin as well as its more characteristic progesterin. This may explain a number of types of uterine bleeding, especially intermenstrual staining, which is probably due to ovulation and the functional types of bleeding of puberty, adolescence and the menopause.

With reference to the value of gynecological or gonortherapy the author states that it would be unfortunate if interest in endocrinology were predicated on an evaluation of the efficacy or inefficacy of gonortherapy for the results of this form of treatment have been disappointing whereas those of gynecological endocrinology have been numerous and brilliant.

Only in cases of functional hemorrhage has the application of organotherapy yielded far better results than other forms of treatment. In such cases the use of the so-called luteinizing hormones obtained from the urine of pregnant women has had a marked effect probably through some harmonistic action as yet not understood rather than through histological changes. In the treatment of menopausal symptom folliculin may be of distinct value.

HARRY W. FICK, M.D.

Johnstone R. W. Gynecological Aspects of Endocrinology. *B. I. M. J.* 1933 II 557.

Gynecological interest in endocrinology is at present focused almost exclusively on the hormone of the ovary and the anterior lobe of the gland and the substances identical with or at least closely similar to them which are found in the placenta and the urine of pregnant women. The Aschheim-Zondek test for pregnancy has perhaps done more than any other single discovery to stimulate interest and research on this subject. This test has been found accurate in over 93 per cent of cases. When it has been weakly positive in the early weeks of a known pregnancy, abortion has often occurred subsequently.

The quantitative estimation of the hormone of the anterior lobe of the pituitary gland in the urine may be of value in the diagnosis of hydatidiform mole, chorionepithelioma, and malignant growths especially those of the genital tract.

The author has been carrying on research with regard to the effect of the hormones of the anterior lobe of the pituitary gland on tumor growth but so far the results have been conflicting. Of interest is the similarity between cancer tissue and trophoblastic tissue. Recently Cook, Dodds and Kennaway have demonstrated a similarity also between ovine and carcinogenic substances.

The author calls attention to the importance of studying the patient with regard to her hormone status both before and after substitution therapy. The conditions for which substitution therapy is suitable include functional bleeding especially the menorrhagia of puberty, habitual abortion and the menopausal syndrome. HARRY W. FICK, M.D.

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Muret The Abdominal Wall During Pregnancy and the Puerperium (Disparos. Ed. in 1 les pendant l'g. tati n et les suites de l'achés) G. J. et Obst. 933 1

The author believes that the changes occurring in the abdominal wall during pregnancy are not only the result of passive and mechanical distention as most obstetrical textbooks teach but are biological phenomena a physiological adaptation to the contents of the abdomen.

Striae gravidarum for instance appear sometimes very early in pregnancy before the uterus attains a large size and are seen in multiparæ with a relaxed abdomen and flaccid abdominal walls. In 10 per cent of pregnant women they do not appear at all.

The author has noted that during the last twenty years the occurrence of striae in pregnant women has decreased. He ascribes this fact to better hygiene, sports, absence of corsets, sun baths and exercise in the fresh air in childhood and adolescence which modify the skin of the young girl. He predicts that in the future 60 per cent or more of women who have borne children will not have striae.

Stratz and Barfuß did not find striae gravidarum in women of primitive races.

During pregnancy the muscles of the abdominal wall undergo a hyperplasia and hypertrophy of their fibers which begin long before the uterus is palpable through the abdominal wall. That is why multiparæ sometimes feel the abdomen getting larger at the beginning of pregnancy.

The author believes that all of the changes depend chiefly on certain endocrine glands—on the corpus luteum of pregnancy at first and then on the placenta. The hormones of the thyroid, hypophysis and adrenal also have some effect.

After discussing the physiology of the abdominal wall during pregnancy the author reviews its pathology. He mentions excessive distention of the abdomen, marked diastasis of the recti muscles, and the development of umbilical inguinal and femoral herniae. In herniae there is also a congenital factor but the development of the abdominal wall and the diminution of the capacity of the abdomen for the pregnant uterus favor the entrance of omentum and gut into the pre-existing opening.

After delivery the abdominal wall undergoes involution which continues for six weeks or longer. This is hastened and facilitated by the wearing of a belt in the first days after delivery, by abdominal exercises after the seventh day and by the massage of the extremities. The author warns against letting the patient get out of bed too soon for the purpose of hastening the involution.

The article is concluded by mention of a few pathological conditions of the abdominal wall occurring in the puerperium. These include subinvolution of the muscles of the abdominal wall in which the muscles remain more or less hypertrophied and degenerate with resulting atony of the wall, subinvolution, marked diastasis of the recti muscle causing herniation of the bowel and much discomfort and persistence of an umbilical inguinal or femoral hernia appearing during pregnancy which is especially apt to occur when the woman resumes hard work before involution has taken place.

Isabelle ANDRUE-SIER MD

Blakely S. B. Abdominal Pain in Pregnancy J. Am. M. Ass. 933 4190

Eighty-five per cent of women complain of abdominal pain at some time during pregnancy.

Much of the abdominal pain is somatic and arises in the pariete of the abdomen. Pure visceral pain is deep, dull and heavy, often intermittent, widely radiating and imperfectly localized, whereas pure somatic pain is more superficial, sharp and stabbing, limited to a smaller area, more definitely localized and at times associated with local tenderness and muscular rigidity.

Most abdominal pain in pregnancy is the direct or indirect result of either uterine enlargement or uterine contraction. Uterine enlargement causes pain by distention, often with or followed by uterine contraction or by stretching or exerting pressure upon organs or tissues. Uterine contraction causes pain chiefly by smooth muscle tension. In general, its severity is in direct proportion to the rapidity of development of the cause.

Age exerts no influence. Primiparæ complain slightly more frequently of abdominal pain than multiparæ.

The tall, slender, asthenic woman suffers most from stretching of the lower part of the abdominal wall, whereas the short, stocky, sthenic woman whose abdomen is short from the pubis to the ensiform cartilage tends to have more pain in the upper part of the abdomen.

The incidence of pain increases with each month up to the ninth and then markedly decreases.

Pain is more frequent in the lower than in the upper abdomen. Pain in the upper abdomen is often made worse by sitting (pressure increased) and relieved by standing (pressure decreased). A sudden increase in the intra-abdominal pressure such as is caused by coughing, sneezing and vomiting may start or aggravate pain.

In cases of vertex presentation pain seems to be slightly more frequent on the side on which the child's buttocks are located. In breech presenta-

## INTERNATIONAL ABSTRACT OF SURGERY

tions distress in the upper part of the abdomen is common

The anatomical sites of origin of abdominal pain in pregnancy are (1) the abdominal parietes (2) the uterus and the uterine contents and adnexa and (3) the intestines liver bile passages and urinary tract

CHARLES F DU BOIS MD

Adair F L An Analysis of a Series of Non Convulsive Cases of Toxemia of Pregnancy Am J Obst & Gy 1933 vii 530

Adair reviews 262 pregnancies with signs of non convulsive toxemia. The average age of the women was twenty nine years. The youngest woman was seventeen years old and the oldest forty six. The average weight of 214 patients when they were first seen was 68.8 kgm the minimum weight 43.3 kgm and the maximum weight 125 kgm.

The average number of pregnancies was 3.06 the minimum 1 and the maximum 18.

The weight showed an average increase of 8.49 kgm in an average period of thirteen weeks which represents an average increase per week of 0.65 kgm.

In 130 (54 per cent) of 40 cases the initial systolic blood pressure was under 130 mm Hg (34 per cent) it ranged from 130 to 170 and in 28 (12 per cent) it ranged from 170 to 200.

Sixteen of 21 initial blood pressure readings above 170 occurred in the last trimester of pregnancy. The initial rise in the blood pressure was observed in the first four lunar months in 6 (3 per cent) of the cases in the fifth and sixth lunar month in 12 (6 per cent) in the seventh and eighth lunar months in 38 (18 per cent) and in the ninth and tenth lunar months in 57 (13 per cent).

The maximum blood pressure prior to delivery occurred in the fifth and sixth lunar months in 12 cases (5 per cent) in the seventh and eighth lunar months in 20 cases (8 per cent) and in the ninth and tenth lunar months in 212 cases (85 per cent).

The maximum blood pressure reading in the puerperium was on the first or second day in 98 cases (43 per cent) on the third and fourth days in 50 cases (22 per cent) on the fifth and sixth days in 33 cases (14 per cent) on the seventh and eighth days in 27 cases (12 per cent) and on the ninth and consecutive days in 21 cases (9 per cent).

In the cases of the patients who returned for observation after delivery the average blood pressure was 138/89 the minimum 102/79 and the maximum 220/34.

Records of edema were found in 66 per cent of the cases. In 85.6 per cent of these cases albumin appeared in the urine at some time during the pregnancy. Casts were found in the urine in only 1.02 per cent. Of 46 cases in which eyeground examinations were made the findings were normal in 30 and abnormal in 16.

In 13 cases the infant was born before it was viable. In 5 the pregnancy was terminated by abortion in 5 by hysterectomy and in 3 by hysterotomy.

The onset of labor in 176 cases (48 per cent) was spontaneous. In 4 of these the infant was born before it was viable in 35 prematurely and in 4 at term. Of 23 cases (6 per cent) in which labor was induced by drugs 10 of the infants were born prematurely and 13 at term. Of 58 cases (22 per cent) in which labor was induced by mechanical or medicinal means or both 27 of the infants were born prematurely and 36 at term.

Abruptio placenta occurred in 13 cases (per cent). This is very much above the usual incidence of this complication. Placenta praevia and retention of an infarcted placenta each occurred once in 1 case. The febrile morbidity in these cases was strikingly below 4 per cent.

There were 4 maternal deaths. Two were due to uraemia and was the result of puerperal sepsis and 2 was due to chronic nephritis and cardiac decompensation.

In institutions in which prenatal care is given there are fewer deaths from convulsive types of toxemia and relatively more deaths associated with the non-convulsive types.

The non-convulsive types of toxemia seem to fall into 2 main groups—one in which the symptoms develop rather abruptly in the later months of pregnancy reach their maximum at the time of labor and then tend to recede rather rapidly and the other in which the symptoms may be manifested early in pregnancy and become progressively worse as the pregnancy progresses. In the latter the climax is usually reached in the later months of pregnancy but in some cases may occur in the early month.

Following delivery there is very slow retrogression of the symptoms and while some improvement is noted the patients return to normal very slowly if at all. Death may occur from impairment of cardiovascular and renal function during the pregnancy or later.

Repeated pregnancies do serious damage especially in the second clinical group and should be prevented by sterilization of the patient whenever this is warranted by the severity of the condition.

EDWARD L. COXELL MD

Evans M D A Th L Effects of the Toxemia of Pregnancy J Obst & Gy & Bur Ent 1933 i 64

Evans claims that the main danger in pregnancy toxemia is not eclampsia as has been taught but chronic nephritis. Of seventy six women with albuminuria who were re-examined from four months to four years after their discharge (two (8 per cent) had definite chronic nephritis. Twelve (16 per cent) had probably chronic nephritis and thirteen (19.6 per cent) had simple albuminuria. In 4 to account for the albuminuria. The author draws the following conclusion with regard to the remote prognosis.

1 If albuminuria is present before the onset of labor for more than fourteen days the possibility of the development of chronic nephritis is very definitely increased

2 A systolic blood pressure of 170 mm Hg or over is dangerous. When it persists for any considerable length of time the advisability of terminating the pregnancy must be considered

3 The woman should remain in bed after the birth of the child until the albuminuria has disappeared unless there is good reason to suppose that the nephritis antedated the pregnancy

4 The older the woman with albuminuria the more liable she is to develop after effects

5 The ultimate prognosis seems to be more favorable in the cases of primiparae than in those of multiparae

6 A good prognosis can be given for the child if it survives the first fourteen days

7 The site of edema and the amount of albumin and the presence or absence of casts in the urine do not seem to have any relation to the remote prognosis

J THOR WELLS WITHERSPOON, M.D.

### LABOR AND ITS COMPLICATIONS

Colebrook, L. and Maxted, W. R. Antisepsis in Midwifery. *J. Obst. & Gynaec. Brit. Empire* 1933, 31: 966

Colebrook and Maxted of Queen Charlotte's Hospital, London, present the findings of their investigations regarding maternal mortality due to infection in cases in which most of the deaths were due to the streptococcus pyogenes. In the first part of their article they discuss precautions to exclude infection from the genital tract.

The streptococcus pyogenes or haemolyticus is not normally present on the skin of the hands, and when implanted on the hands of the normal individual disappears spontaneously after varying lengths of time. When it is implanted in pus rather than in the form of a broth culture, a longer time is required for its disappearance.

In experiments reported by the authors, pus or saliva containing the streptococcus pyogenes was rubbed on the finger and allowed to dry. The effects of washing alone, antiseptics alone, and both washing and antiseptics were then determined. The experiments being carefully controlled. In general, the results showed that washing alone is not a sure means of ridding the hands of bacteria and offers no protection against subsequent infection. A 2.10 aqueous solution of iodine acting for three minutes, a similar solution with a 3 to 4 per cent content of potassium iodide acting for one minute, 30 per cent dettol paste acting for two minutes, and undiluted dettol acting for a minute and a half gave excellent results. Dettol is non-irritating to the skin. Washing and then soaking the hand in a 1:1000 solution of bichloride of mercury or a 1:160 solution of lysol gave uncertain results. Washing for one minute followed by the rubbing into the hands of 30 per cent dettol

cream for two minutes produced perfect sterility. The use of either iodine or dettol, followed by protection lasting for from three to six hours.

The authors give the following directions for preparation for delivery:

Wash the hand for two minutes in 1 pt of warm water with a yellow soap bar and then dry them. Put on dry gloves. Wash the gloves thoroughly with soap and water for a minute and then sterilize them by soaking for two minutes in a 1:50 aqueous solution of iodine with a 4 per cent content of potassium iodide, undiluted dettol, a 1:50 solution of lysol, or a 1:250 solution of biniodide of mercury or by rubbing in 30 per cent dettol cream.

In the second part of the article, measures to prevent infection by bacteria already present in the genital tract or on the vulva are considered. The cleansing effect of soap and water on the vulva is emphasized. The authors recommend the use of a 1 per cent soft soap solution with a 2 per cent content of dettol. They advocate also the application of dettol cream to the vulva every three hours during labor.

Repeated attempts to sterilize the genital tract with dettol, 4 per cent mercurochrome, crystal violet, and brilliant green were unsuccessful. Also, unsuccessful was the use of these and several other antiseptics on infected blood clots. The most marked effect was produced by crystal violet and brilliant green.

W. R. S. ACKEN, JR., M.D.

Gilliat, W. The Contraction Ring in Labor. *J. Obst. & Gynaec. Brit. Empire* 1933, 31: 36

Gilliat states that the contraction ring in labor is an extremely serious complication. It can never be foreseen and as a rule is difficult to diagnose. Intra-uterine manipulation is frequently undertaken before the diagnosis is made and in some cases necessary to discover the cause of the delay.

Immature rupture of the membranes and intra-uterine manipulation are usually cited as the two most common causes of the formation of a contraction ring, but the following factors also play a role: (1) increased irritability of the circular fibers of the uterus, (2) uterine inertia, (3) the posterior position of the vertex presentation and (4) the woman's age.

The difficulty of making a definite diagnosis is well known. On abdominal examination any deviation from the normal in the shape of the uterus is suggestive. The ring itself is often difficult to feel because of its position, which is usually around the child's neck or at the level of the upper border of the symphysis pubis, and because its presence is frequently masked by distention of the bladder. When the ring is felt through the abdominal wall, it can be defined more easily during contraction than during relaxation of the uterus. On vaginal examination, introduction of the hand into the uterus is not always necessary, as sometimes the diagnosis may be made with considerable certainty when the head cannot be pressed into the pelvis during a pain

## INTERNATIONAL ABSTRACT OF SURGERY

tions distress in the upper part of the abdomen is common

The anatomical sites of origin of abdominal pain in pregnancy are (1) the abdominal parietes (2) the uterus and the uterine contents and adnexa and (3) the intestines, liver, bile passages, and urinary tract

CHANCES I Du Bois MD

Adair T L An Analysis of a Series of Non Convulsive Case of Toxemia of Pregnancy  
J Obstet Gynecol 1933 x 1 530

Adair reviews 263 pregnancies with signs of non convulsive toxemia. The average age of the women was twenty nine years. The youngest woman was seventeen years old and the oldest forty six. The average weight of 214 patients when they were first seen was 68.8 kgm. the minimum weight 43.3 kgm. and the maximum weight 125 kgm.

The average number of pregnancies was 3.06 the minimum 1 and the maximum 18. The weight showed an average increase of 8.40 kgm in an average period of thirteen weeks which represents an average increase per week of 0.65 kgm.

In 130 (54 per cent) of 240 cases the initial systolic blood pressure was under 130 in 82 (34 per cent) it ranged from 101 to 110 and in 24 (10 per cent) it ranged from 170 to 200.

Sixteen of 111 initial blood pressure readings above 100 occurred in the last trimester of pregnancy. The initial rise in the blood pressure was observed in the first four lunar months in 6 (13 per cent) of the cases in the fifth and sixth lunar months in 14 (6 per cent) in the seventh and eighth lunar months in 38 (18 per cent) in the ninth and tenth lunar months in 1 (1 per cent).

The maximum blood pressure prior to delivery occurred in the fifth and sixth lunar months in 12 cases (5 per cent) in the seventh and eighth lunar months in 20 (9 per cent) and in the ninth and tenth lunar months in 21 cases (9 per cent).

The maximum blood pressure reading in the puerperium was on the first or second day in 95 cases (43 per cent) on the third and fourth days in 50 cases (22 per cent) on the fifth and sixth days in 33 cases (14 per cent) on the seventh and eighth days in 2 cases (1 per cent) and on the ninth and tenth and eleventh days in 21 cases (9 per cent).

In the cases of the patients who returned for observation after delivery the average blood pressure was 138.4, the minimum 02/50 and the maximum 0114.

Records of albumin were found in 66 per cent of the case. In 85 per cent of these cases albumin appeared in the urine at some time during the pregnancy. Casts were found in the urine in only 10 per cent. Of 46 cases in which eye examination was made the findings were normal in 30 and abnormal in 16.

In 13 cases the infant was born before it was viable in 5 cases the pregnancy was terminated by abortion in 5 by hysterectomy and in 3 by

The onset of labor in 126 cases (48 per cent) was spontaneous. In 4 of these the infant was born before it was viable in 35 prematurely and in 87 at term. Of 23 cases (9 per cent) in which labor was induced by drugs 10 of the infants were born prematurely and 13 at term. Of 58 cases (22 per cent) in which labor was induced by mechanical or medicinal means or both 22 of the infants were born prematurely and 36 at term.

Abruptio placentae occurred in 13 cases (5 per cent). This is very much above the usual incidence of this complication. Placenta previa and placenta marginally infarcted placenta each occurred once in 1 case. The febrile morbidity in these cases was strikingly high—4 per cent.

There were 4 maternal deaths. Two were due to uraemia, 1 was the result of puerperal sepsis and 1 was due to chronic nephritis and cardiac decompensation.

In institutions in which prenatal care is given there are fewer deaths from convulsive types of toxemia and relatively more deaths associated with the non convulsive types.

The non convulsive types of toxemia seem to fall into 2 main groups—one in which the symptoms develop rather abruptly in the later months of pregnancy, reach their maximum at the time of labor and then tend to recede rather rapidly and the other in which the symptoms may be manifested early in pregnancy and become progressively worse as the pregnancy progresses. In the latter the maximum is usually reached in the later months of pregnancy but in some cases may occur in the early months.

Following delivery there is very slow retrogression of the symptoms and while some improvement is noted the patients return to normal very slowly. If at all death may occur from impairment of cardiovascular and renal function during the pregnancy or later.

Repeated pregnancies do serious damage especially in the second clinical group and should be prevented by sterilization of the patient whenever this is warranted by the severity of the condition.

EDWARD L CORNELL, MD

Franks M D A The Late Effects of the Toxemia of Pregnancy  
J Obstet Gynecol 1933 x 1 534

Franks claims that the main danger in pregnancy toxemia is not eclampsia as has been taught but chronic nephritis. Of seventy women with albuminuria who were re-examined from four months to four years after their discharge 10 (14 per cent) had definite chronic nephritis. Twelve (17 per cent) had probably chronic nephritis and thirteen (19 per cent) had simple albuminuria. In 10 to 16 per cent there was some other disease to account for the albuminuria. The author draws the following conclusions with regard to the remote prognosis.

1 If albuminuria is present before the onset of labor for more than fourteen days the possibility of the development of chronic nephritis is very definite & increased

2 A systolic blood pressure of 100 mm Hg or over is dangerous. When it persists for any considerable length of time the advisability of terminating the pregnancy must be considered

3 The woman should remain in bed after the birth of the child until the albuminuria has disappeared unless there is good reason to suppose that the nephritis antedated the pregnancy

4 The older the woman with albuminuria the more liable she is to develop after-effects

5 The ultimate prognosis seems to be more favorable in the cases of primiparae than in those of multiparae

6 A good prognosis can be given for the child if it survives the first fourteen days

The site of edema and the amount of albumin and the presence or absence of casts in the urine do not seem to have any relation to the remote prognosis

J THORNWELL WITHERSPOON, M.D.

## LABOR AND ITS COMPLICATIONS

Colebrook, L. and Maxted W. R. Antiseptics in Midwifery. *J. Obst. & Gynaec. Brit. Emp.* 933 xl 9/5

Colebrook and Maxted of Queen Charlotte's Hospital London present the findings of their investigations regarding maternal mortality due to infection in cases in which most of the deaths were due to the streptococcus pyogenes. In the first part of the article they discuss precautions to exclude infection from the genital tract

The streptococcus pyogenes or haemolyticus is not normally present on the skin of the hand and when implanted on the hand of the normal individual disappears spontaneously after varying lengths of time. When it is implanted in pus rather than in the form of a broth culture a longer time is required for its disappearance

In experiments reported by the authors pus or saline containing the streptococcus pyogenes was rubbed on the finger and allowed to dry. The effects of a ring alone antiseptics alone and both washing and antiseptics were then determined. The experiments being carefully controlled. In general the results showed that washing alone is not a sure means of ridding the hands of bacteria and offers no protection against subsequent infection. A 1:100 aqueous solution of iodine acting for three minutes a similar solution with a 3 to 4 per cent content of potassium iodide acting for one minute 30 per cent dettol paste acting for 10 minutes and undiluted dettol acting for a minute and a half gave excellent results. Dettol is non-irritating to the skin. Washing and then soaking the hand in a 1:1000 solution of bichloride of mercury or a 1:100 solution of lysol gave uncertain results. Washing for one minute followed by the rubbing into the hands of 1 dr of 30 per cent dettol

cream for 15 to 20 minutes produced perfect sterility. The use of either iodine or dettol is followed by protection lasting for from three to six hours

The authors give the following directions for preparation for delivery

Wash the hand for two minutes in 1 pt of warm water with a yellow soap bar and then dry them. Put on dry gloves. Wash the gloves thoroughly with soap and water for a minute and then sterilize them by soaking for two minutes in a 1:50 aqueous solution of iodine with a 4 per cent content of potassium iodide undiluted dettol a 1:50 solution of lysol or a 1:250 solution of biniodide of mercury or by rubbing in 30 per cent dettol cream

In the second part of the article measures to prevent infection by bacteria already present in the genital tract or on the vulva are considered. The cleansing effect of soap and water on the vulva is emphasized. The authors recommend the use of a 1 per cent soft soap solution with a 2 per cent content of dettol. They advocate also the application of dettol cream to the vulva every three hours during labor

Repeated attempts to sterilize the genital tract with dettol 4 per cent mercurochrome crystal violet and brilliant green were unsuccessful. Also unsuccessful was the use of these and several other antiseptics on infected blood clots. The most marked effect was produced by crystal violet and brilliant green

HENRY S. ACKEN, JR., M.D.

Giffatt, W. The Contract on Ring in Labor. *J. Obst. & Gynaec. Brit. Emp.* 933 l 036

Giffatt states that the contraction ring in labor is an extremely serious complication. It can never be foreseen and as a rule is difficult to diagnose. Intra uterine manipulation is frequently undertaken before the diagnosis is made and in some cases is necessary to discover the cause of the delay

Premature rupture of the membranes and intra uterine manipulation are usually cited as the two most common causes of the formation of a contraction ring but the following factors also play a rôle: (1) increased irritability of the circular fibers of the uterus (2) uterine inertia (3) the posterior position of the vertex presentation and (4) the woman's age

The difficulty of making a definite diagnosis is well known. On abdominal examination any deviation from the normal in the shape of the uterus is suggestive. The ring itself is often difficult to feel because of its position which is usually around the child's neck or at the level of the upper border of the symphysis pubis and because its presence is frequently masked by distention of the bladder. When the ring is felt through the abdominal wall it can be defined more easily during contract on than during relaxation of the uterus. On vaginal examination introduction of the hand into the uterus is not always necessary as sometimes the diagnosis may be made with considerable certainty when the head cannot be pressed into the pelvis during a pain



luteum of pregnancy the pregravid endometrium passes by an easy transition into the decidua. After retrogression or excision of the corpus luteum the endometrium degenerates, a caustic inflammatory part and bleeding begins. Hemorrhage of the growing follicle also results in bleeding. As the follicle contains only follicularin the bleeding is determined apparently by the removal of this hormone. The bleeding after corpus luteum excision or regression is rarely explained by the now demonstrated fact that the corpus luteum produces folliculin as well as its more characteristic progesterone. This may explain a number of types of uterine bleeding especially intermenstrual staining which is probably due to ovulation and the functional types of bleeding of puberty, adolescence and the menopausal.

With reference to the value of gynecological or gynecotherapy, the author states that it would be unfortunate if interest in endocrinology were predicated on an evaluation of the efficacy or inefficacy of gynecotherapy for the results of this form of treatment have been disappointing. Here, those of gynecological endocrinology have been numerous and brilliant.

Only in cases of lunet nal hæmorrhage h the applicati n of rganotherapy yielded f r better results than other forms f tr tment In such cases the use of the so called lut ins ng h rmo e obtained from the urine of pregnant w men ha had a marked effect probably through some hæm t t c action as yet n t unlerstood r ther than through h stol cal change In the treatment of men sual s mptoms f lliculin m b of d st n t value

B. A. W. J. M. D.

Johnstone R W Gynecological  
endocrinology B t M J 911

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finement such as the husband with a sore throat or a child with impetigo or a discharging ear may contaminate a towel or hand basin used by the mother or midwife. The prevention of puerperal infection lies in an absolute aseptic toilet of the hands of the attendants at delivery, the use of rubber gloves and anti septic preparation of the vulva.

ALBERT W. HOLMES, M.D.

Rivett, I. C. The Diagnosis of Puerperal Sepsis.  
*P. M. J.* 933, 1726.

Rivett classifies the different types of puerperal sepsis as follows:

1. Local sepsis in the genital tract.
2. Spread of infection to the blood stream—septicæmia.
3. Spread of infection to the peritoneal cavity—peritonitis.
4. Infection spreading into clot in thrombosed veins.

5. Direct extension along the fallopian tubes or lymphatic spread to the cellular tissue at the base of the broad ligament—salpingitis and pelvic cellulitis.

6. Infection of the urinary tract usually with the bacillus coli.

When septicæmia is suspected at Queen Charlotte's Hospital, London, aerobic and anaerobic blood cultures are made as the temperature is rising. In the author's cases of streptococcus hæmolyticus septicæmia the mortality has been well over 80 per

cent, whereas in those of blood stream infection due to anaerobic streptococci it has been 20 per cent.

In an effort to diagnose peritonitis at its onset the author found that the symptoms differ from those which have been considered classical. There is usually a typical picture of local infection of the genital tract but frequently the tongue is clean and moist. The patient has an anxious look. Abdominal pain is rare, occurring in less than a third of the cases but rebound tenderness is present. The abdomen often moves well with respiration. Frequently there is pain when the uterus is moved from side to side over the promontory of the sacrum. Abdominal rigidity is present in only about 12 per cent of cases and vomiting is by no means common. Often there is diarrhoea. When this occurs after two or three days of pyrexia it is strongly suggestive of early peritonitis. The most common sign of early peritonitis is distention of the abdomen with tympanites. This is present in over 60 per cent of the cases of early peritonitis seen by the author. By the time free fluid can be demonstrated on clinical examination the patient is beyond help.

The author believes that drainage is the treatment of choice in early peritonitis. He makes an incision from 1 to 1½ in long just above the level of the fundus. Through this he inserts a special perforated tube into the cul de sac and aspirates any fluid that may be present.

ALBERT W. HOLMES, M.D.

# GENITO-URINARY SURGERY

## ADRENAL KIDNEY AND URETER

Mitchell D R and Scott J M Studies of Urinary Acidifiers and Anti septics in Relation to Pyelitis and Cystitis *Brit J Urol* 1933 1 225

From clinical studies of urinary antiseptics and acidifiers the authors draw the following conclusions

1 Ammonium chloride acid ammonium phosphate and sodium benzoate are effective urinary acidifiers but a change of pH has no influence on infection

2 Hexylresorcinol pyridium and helmitol have given no evidence that they are of value as urinary antiseptics

3 Hexamine in well acidified urine cures at least one third of the cases of non surgical pyelitis and cystitis

4 Hexamine is indicated at the kidney pelvis as for cystitis and is as effective for pyelitis as for cystitis

5 There is no method of determining which case will respond

6 Persistence to formaldehyde may be due to individual characteristics of the organism

7 Local infection (colonic absorption) seems to be a factor in the causation of persisting urinary infections

8 In simple pyelitis of pregnancy urinary infection does not disappear until after delivery

CLAUDE D H LUCE MD

## BLADDER URETHRA, AND PENIS

Riba L W and Sanner J F The Treatment of Urethral Strictures of Small Caliber by a New Method Preliminary Report *J Urol* 1933 31 301

The authors describe and advocate a new method of treating troublesome small urethral strictures especially when they are multiple. The tendency during the last ten years seems to be to adopt conservative treatment the stricture being cut only when dilatation is impossible. The authors use sounds or bougies for urethral dilatation and a urethrotome for cutting. Some strictures if cut first offer less resistance to dilatation. The following groups of patients object to conservative method of treatment (1) the majority of colored patients (2) patients with an irritable urethra (3) patients who are hypersensitive to pain (4) patients with a urinary infection who develop sepsis following instrumentation (5) patients with soft bleeding strictures (6) those with fibrotic traumatic or congenital strictures (7) those with strictures of the penoscrotal angle (8) those with resilient strictures (9) those with a urethra which is difficult to instrument (10) elderly patients by whom the shock of sounding is not well

borne and (11) patients who do not have time to undergo a long course of urethral dilatation. Sepsis of the urethra is associated with the danger of hemorrhage and sepsis has a certain mortality and necessitates hospitalization for a variable length of time.

With the recent development of the cutting current the authors conceived the idea of using such a current to cut urethral strictures. They have devised an electro urethrotome which may be introduced into any strictured urethra provided a small form bougie can be passed. This instrument carries a cutting loop which may be expanded up to a desired caliber just proximal to the stricture or strictures. The cutting current is turned on and the urethrotome withdrawn. The advantages of this method of treating small strictures are the absence of shock pain and active postoperative hemorrhage.

CLAUDE D H LUCE MD

Sanchis I erpina V Our Operative Procedures in Penobalanie and Penoscrotal Hypospadias (Nuestro procedimientos operativos en la hipospadias penobalanica y penoscrotal) *Revista de Medicina y Cirugia* 1933 1 979

The various methods for the correction of hypospadias may be divided into three groups (1) those in which the plastic flaps are taken from the penis, (2) those in which they are taken from the abdomen or scrotum and (3) those in which free plastic flaps are employed.

The author's technique is of the second type, the being made of pedicled flaps from contiguous regions, principally the scrotum.

The first step in the procedure is detachment of the urinary current by means of cystotomy. Later with the penis stretched up and onto the abdomen parallel incisions through the skin of the penis are made from the glans to the abnormal opening. The margins are then dissected somewhat medially. A somewhat wider and longer pedicled skin flap is obtained from the scrotum below, folded upwards, and sutured to the penile flap, a new urethra being thus constructed. The denuded surface remains open and is then covered by means of another pedicled flap from the scrotum and the scrotal wound closed.

WILLIAM F MEERER MD

Lal H H M Ombredanne's Functional Operation for Hypospadias *Ann Surg* 1933 97 513

Ombredanne has reported 250 cases in which he performed his pouch operation without a failure. The author has completed the operation in 53 cases without a failure. The operation does away with leakage and indwelling catheter external urethrotomy and cystotomy. It is far superior to the standard operations.

The usual incurving deformity is corrected by a transverse incision just above the opening. The fibrous bands are cut and the corpora cavernosa freely exposed. The meatus recedes and the incision becomes an oblong gap. The edges are sutured together and the penis is placed in hyperextension. Hyperextension is maintained until the tissues become pliable from two to four months.

The periphery of the sac is outlined with a linen pursestring suture. The proximal half of the flap equals the distal which extends from the meatus to the tip of the gland. The width between the sutures is one third the circumference. The suture extends to the tip of the glands back to its insertion. The incision is 1.5 mm. external to the suture. The proximal half of the flap is carefully dissected to the meatus in which a catheter is placed to prevent perforation of the mucosa. The part of the flap which extends from the meatus to the glands equal to one fourth the circumference is not dissected as it furnishes the blood supply of the urethral sac. The incision is extended on each side to the points of the extended prepuce but connected on each side by a transverse incision in the mucosa of the prepuce 2 mm. above the furrow of the glands. The external edges of the horizontal and transverse incisions are freed. The pursestring suture is tightened room being left for the passage of urine.

A Y shaped buttonhole is cut in the preputial flap, the vertical arm starting at the level of the collar of the glands in the a scular area. This is extended through the skin over the finger. The vessels and tissue are pushed aside. The glands are then pushed through the opening so that the raw surface of the flap is next to the inferior surface of the penis. The ends of the pursestring suture are passed through and tied. The divergent arms of the Y are sutured on each side of the sac opening. The shoulders are pulled out to prevent the formation of fistula. The edges of the flap are united. The edges of the remaining raw surface are brought together and the distal end is united to the flap with a mattress suture.

For a few days after the operation the penis is tied to a frame which bridges the thighs to prevent folds. Careful postoperative care, avoidance of interference with the nutrition will prevent large edema. If edema is excessive puncture with the injection of mild adrenalin is indicated. With the exception of a bland antiseptic powder no dressings are used.

About four months later the sac or tubercle is united to the glands. Retraction is made in opposite directions with an Allis clamp at the summit of the glands and another clamp at the summit of the tubercle. This exposes the detail of the urethra. Hair may be present in the cutaneous lining. The complete thickness of skin with the hair is dissected. There is sufficient mucous membrane on the roof to furnish a complete covering if needed. Tissue between the clamps 3 to 4 mm. in thickness is excised. Internally a strip of mucosa from 5 to 6 mm. broad

is reserved. Removal of the mucosa of the glands alone is done. This prevents bleeding and gives a raw surface for union. One layer of sutures is required in the cases of children but two in those of adults. The inner layer consists of fine gut the end of which projects through the meatus and are knotted. If a rounded tubercle is absent because of retraction or sloughing a transverse incision is made below the meatus and the edges are sutured together in a horizontal plane.

In a penneal and vulvopenneal hypospadias the penneal orifice is made into a penile orifice by using tissue back almost to the anus. Small scrotal flaps are used to cover the mass of the sac. After the orifice is formed the method is continued as described. When operation is necessary for glandular hypospadias the method used for penile hypospadias is used.

The end results are a triangular meatus and a small piece of brown preputial skin on the under surface of the glands.

The operation is contra-indicated in the mild glandular cases with a straight penis and in advanced cases associated with hermaphroditism. The best time for operation is between the ages of six and eight years.

The author's conclusions with regard to the operation are summarized as follows:

1. Its results are constant.
2. It overcomes lateral leakage.
3. It forms a normal organ uninfluenced by erection.
4. Gentleness, thoroughness and careful postoperative care are essential.

The article is well illustrated.

CLAUDE D. PICKRELL, M.D.

Ngai S. K. The Etiological and Pathological Aspects of Squamous Cell Carcinoma of the Penis Among the Chinese. *Am J Ca* 1933 12: 59.

A striking finding in cases of squamous cell carcinoma of the penis is the practically constant presence of phimosis. The literature reveals complete absence of penile carcinoma in circumcised Jews. Hence certain conditions associated with or resulting from phimosis may be factors in the development of penile carcinoma. These are retention of urinary products, the accumulation of desquamated epithelium and the secretion of Tyson's glands and lack of cleanliness of the preputial sac. In time the secretion of Tyson's glands which contains a high percentage of fatty material may decompose under the action of ferments become rancid saponify and produce other substances which may directly stimulate epithelial growth. That the tumor is the direct result of the stimulating action of substances accumulated or retained from the urine or Tyson's glands is proved by the fact that practically all of the tumors originated in the epithelium directly exposed to the smegma as they arose from the glans penis, the inner surface of the prepuce or the

# GENITO-URINARY SURGERY

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borne and (11) patients who do not have time to undergo a long course of urethral dilatation. Section of the urethra is associated with the danger of hemorrhage and sepsis has a certain mortality and necessitates hospitalization for a variable length of time.

With the recent development of the cutting current the authors conceived the idea of using such a current to cut urethral strictures. They have devised an electro-urethrotome which may be introduced into any strictured urethra providing a filiform bougie can be passed. This instrument carries a cutting loop which may be expanded up to a desired caliber just proximal to the stricture or strictures. The cutting current is turned on and the urethrotome withdrawn. The advantages of this method of treating small strictures are the absence of shock pain and active postoperative hemorrhage.

CLAUDE D HOLMES MD

Sanchez Verpina S Our Operative Procedures in Penobulbar and Penoscrotal Hypospadias (Nuestro procedimiento operatorio en la hipospadias penobulbar y penoscrotal) *Arch Med Cir Urol* 1933 x 989

The various methods for the correction of hypospadias may be divided into three groups (1) those in which the plastic flaps are taken from the penis (2) those in which they are taken from the abdomen or scrotum and (3) those in which free plastic flaps are employed.

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WILLIAM R MEERER MD

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The periphery of the sac is outlined with a batten pursestring suture. The proximal half of the flap equals the distal which extends from the meatus to the tip of the gland. The width between the sutures is one third the circumference. The suture extends to the tip of the glans back to its insertion. The incision is 15 mm external to the urethra. The proximal half of the flap is carefully dissected to the meatus in which a catheter is placed to prevent perforation of the mucosa. The part of the flap which extends from the meatus to the glans equals one fourth the circumference and is not dissected as it furnishes the blood supply of the urethral sac. The incision is extended on each side to the points of the extended prepuce but connected on each side by a transverse incision in the mucosa of the prepuce 2 mm above the furrow of the glans. The external edges of the horizontal and transverse incisions are freed. The purse string suture is tightened room being left for the passage of urine.

A Y shaped buttonhole is cut in the preputial flap the vertical arm starting at the level of the collar of the glans in the avascular area. This is extended through the skin over the finger. The vessels and tissue are pushed aside. The glans is then pushed through the opening so that the raw surface of the flap is next to the inferior surface of the penis. The ends of the pursestring suture are passed through and tied. The divergent arms of the Y are sutured on each side of the sac opening. The shoulders are pulled out to prevent the formation of fistulae. The edge of the flap are united. The edges of the remaining raw surface are brought together and the distal end is united to the flap with a mattress suture.

For a few days after the operation the penis is tied to a frame which bridges the thighs to prevent folds. Careful postoperative care avoidance of interference with the nutrition will prevent large oedema. All oedema is excessive puncture with the injecton of mild adrenalin is indicated. With the exception of a bland antiseptic powder no dressings are used.

About four months later the sac or tubercle is united to the glans. Retraction is made in opposition with an Allis clamp at the summit of the glans and another clamp at the summit of the tubercle. This exposes the detail of the urethra. Hair may be present in the cutaneous lining. The complete thickness of skin with the hair is dissected. There is sufficient mucous membrane on the roof to form a complete covering if needed. Tissue between the clamp 3 to 4 mm in thickness is excised. Internally a strip of mucosa from 5 to 6 mm broad

is reserved. Removal of the mucosa of the gland alone is done. This prevents bleeding and gives a raw surface for union. One layer of sutures is required in the cases of children but two in those of adult. The inner layer consists of fine gut the ends of which project through the meatus and are knotted. If a rounded tubercle is absent because of retraction or sloughing a transverse incision is made below the meatus and the edges are sutured together in a horizontal plane.

In a perineal and vulvoperineal hypospadias the penneal orifice is made into a penile orifice by using tissue back almost to the anus. Small scrotal flaps are used to cover the mass of the sac. After this orifice is formed the method is continued as described. When operation is necessary for glandular hypospadias the method used for penile hypospadias is used.

The end results are a triangular meatus and a small piece of brown preputial skin on the under surface of the glans.

The operation is contra indicated in the mild glandular cases with a straight penis and in advanced cases associated with hermaphroditism. The best time for operation is between the ages of six and eight years.

The author's conclusions with regard to the operation are summarized as follows:

- 1 Its results are constant
- 2 It overcomes lateral leakage
- 3 It forms a normal organ uninfluenced by erection
- 4 Gentleness thoroughness and careful post operative care are essential

The article is well illustrated

CLAUDE D. PICKRELL, M.D.

Ngai S. A. The Etiological and Pathological Aspects of Squamous Cell Carcinoma of the Penis Among the Chinese. *Am J Cancer* 933 : 239

A striking finding in cases of squamous cell carcinoma of the penis is the practically constant presence of phimo. The literature reveals complete absence of penile carcinoma in circumcised Jews. Hence certain conditions associated with or resulting from phimosis may be factors in the development of penile carcinoma. These are retention of urinary products the accumulation of desquamated epithelium and the secretion of Tyson's glands and lack of cleanliness of the preputial sac. In time the secretion of Tyson's glands which contains a high percentage of fatty material may decompose under the action of ferments become rancid saponify and produce other substances which may directly stimulate epithelial growth. That the tumor is the direct result of the stimulating action of substances accumulated or retained from the urine or Tyson's glands is proved by the fact that practically all of the tumors originated in the epithelium directly exposed to the smegma as they arose from the glans penis the inner surface of the prepuce or the

sulcus. The possibility that the effect of the smegma may be latent for a long time may explain the development of a penile carcinoma when circumcision was done several months or years previous to the appearance of the neoplasm.

The greater frequency of penile cancer in the Far East than in Europe and America may be attributed to the practice in the Far East of applying highly irritating plasters in the treatment of gonorrhea, chancre and chancroids. Of the author's patients 63 per cent denied gonorrheal infection and of those who admitted gonorrhea none mentioned the previous use of a plaster. The author attributes the frequency of penile cancer in Asiatics to lack of personal hygiene and infrequency of circumcision. The earlier occurrence of cancer in the Chinese than in Westerners may be due to racial differences.

LOUIS NEWBY, M.D.

### GENITAL ORGANS

Engl W J and Lowe W E. Individualizing the Prostatic Patient in the Select on of Treatment. *J A M A* 119: 1933 136

This article is based on 105 resections performed in 194 cases representing all types of prostatic enlargement and carefully followed after operation. In the 34 cases of malignant obstruction of the prostate resection of the obstruction was followed by radium implantation or deep X-ray therapy. There was only 1 immediate death. Three years later 21 of the patients were alive and comfortable and all were relieved of their distressing symptoms.

The cases of benign obstruction are divided into 2 groups—25 which were poor risks and 132 which were good risks.

The poor risk cases were those of senile or very obese patients with degenerative changes and complications. Of the 25 patients who were poor risks 22 are free from urinary discomfort and have only a small amount of residual urine. 4 have not been relieved and 2 have retention.

In the cases which were good surgical risks routine cysto-urethroscopic examinations were made and the indications for operation were determined according to Randall's classification. Such cases include those which are ideally suited for transurethral resection, those unsuited for such resection and a small group of borderline cases in which resection can be done first and if unsuccessful may be followed by prostatectomy. Many of the best results of resection were obtained in the borderline cases. Nineteen of the 30 patients with a borderline condition reported completely or partially satisfactory results.

The authors discuss also a group of so-called neglected cases of prostatic conditions in which operation is feared by both the patient and the general practitioner. For such cases resection ideal as it is more conservative and less formidable than prostatectomy.

The immediate mortality of resection in the 194 cases reviewed was 1.5 per cent. The authors regard

resection as a very efficient conservative procedure which in many cases may be done instead of prostatectomy.

MURRAY MINTZ, M.D.

Alcock N G. Prostatic Resection. *J Am A* 119: 933 355

In the past two years Alcock has done about 500 transurethral resections of the prostate. This report summarizes his observations in 400 consecutive resections performed in cases of the type in which he formerly performed prostatectomy. The report does not include resections for bars and median lobes. The resections are compared with prostatectomies performed in a hospital by the surgeons and in cases cared for by the same nurses. Ninety per cent of the result of resection depends on the surgeon performing the operation. The size of the gland does not determine the choice between resection and prostatectomy, except in a very small group of cases in which the lobes in the prostatic urethra are very large.

Alcock has added innovations: (1) air cystograms and urethrograms made before and after resection to determine the success of resection in overcoming obstruction at the neck of the bladder and (2) more frequent performance of the operation in 2 stages, the indication for the second stage being based largely on the functional result and post-operative urethrogram of the first resection. The second resection is always easier and permits the removal of a larger amount of tissue.

Uncontrollable bleeding during resection is due to faulty technique and should not be blamed on the method. In none of the author's cases was cystostomy necessary for the control of hemorrhage and in none was hemorrhage responsible for death. Late hemorrhage is quite common. In about 10 per cent of the cases reviewed there was some terminal hematuria during the third, fourth or fifth week after the operation. The author believes that this comes from granulations that form over the area of resection rather than from sloughing. This opinion is based on the findings of post-operative cystoscopic examinations. Of the reviewed cases treated by prostatectomy, late hemorrhage occurred in 7 and were the chief cause of death in 2.

The most common serious complication of resection is infection, but it is not so often fatal as after prostatectomy. It is due to necrosis following the resection. In the presence of urine, necrosis favors the multiplication of bacteria with consequent sepsis and urinary amia.

A troublesome but not serious symptom after resection is urinary frequency. With improvement in the technique of the operation the incidence of this complication is lessened. Residual urine after resection is gradually decreased. If it does not disappear within a few weeks another resection is indicated.

In the 400 cases of resection reviewed the average stay in the hospital was seventeen and a half days as compared with an average stay of seven!

one day in the cases in which prostatectomy was done. A few which previously cared for by prostatectomy case is not available for a resection cases with a corresponding saving in nursing care.

In the 400 cases treated by prostatectomy the total mortality was 24.2 per cent but if the deaths occurring between the first and second operations and those occurring in cases of carcinoma are excluded the mortality was less than 5 per cent. In the 400 cases treated by resection the total mortality was 6.5 per cent. Of the 26 deaths 15 occurred in the first 100 cases and 11 in the last 300. In the last 25 resections in which there were only 2 deaths the mortality was less than 1 per cent.

In conclusion Alcock states that he will continue doing resections rather than prostatectomies until a better method is introduced. He now does resection in many poor risk cases in which prostatectomy is feared. With increasing experience the time required for the resection is diminished, a greater amount of tissue is removed, the postoperative course becomes smoother and the results become more certain and much more satisfactory.

WILLIAM MELTZER, M.D.

Herman I. and Greene L. B. Transurethral Prostatic Resection, Analyses and Studies of Results. *J. Am. Urol. Ass.* 1933, 13: 338.

Since December 1931 the authors have done eighty transurethral resections for benign prostatic hyperplasia. The primary mortality was 3.7 per cent. All of the seventy-five patients surviving are free from mechanical disturbances. The average length of time required for convalescence is eight weeks. In uncomplicated cases the average length of time the patient remains in the hospital varies from five to eight days and in complicated cases because of prolonged pre-operative treatment is thirty-six days.

From their experience the authors conclude that the ideal case for transurethral resection is the relatively early case of prostaticism without complications. In thirty-six of their cases of this type no pre-operative treatment was given and recovery was rapid and uncomplicated. In the great majority of cases of large prostate the skilled technician can remove the prostate by transurethral resection with a primary mortality no greater than that of prostatectomy. Of the advanced complicated cases with a very large growth transurethral resection is impossible because of mechanical factors or complications in 10 per cent. In an additional 20 per cent the results are poor because of mechanical factors or complications and open operation is preferable.

WILLIAM MELTZER, M.D.

Feld, J. Hammond T. F. Rief, S. E. W. Irwin, W. A. and Others. *Diagnosis and Treatment of the Enlarged Prostate*. *P. R. Soc. Med. Lond.* 1933, 36.

EVERIDGE said that per urethral methods of treating the enlarged prostate have come to the back-

ground in England partly on account of the popularity of suprapubic prostatectomy. Fewer than 10 per cent of his cases have been suitable for per urethral diathermy. There are three methods of attack.

1. Simple diathermy electrocoagulation (Beer and Collings).

2. Diathermy punching. In this procedure the glandular projection is coagulated and then punched (Walker, Knapp, Bumpus and Caulk).

3. Resection by means of an electrotome (David McCarthy, Stern and Canny Ryall).

Everidge began to use per urethral treatment in 1926. He depends chiefly on electrocoagulation. There are two disadvantages to this treatment—the slowness with which the results are obtained and the danger of sepsis.

In 1928, 1929 and 1930 Everidge made extensive trials with the punch. He gave up the punch operation because the scope of the punch encroached upon the ureters and even if the ureters were not damaged the oedema and sepsis favored ascending infection.

He stated that the technique of resection is by no means simple and only those familiar with the use of the cystoscope or urethroscope should attempt it. Resection was followed by alarming hemorrhage in only one of his cases but like the punch operation is associated with the danger of sepsis.

The obstructions which Everidge regards as suitable for treatment by per urethral diathermy are: (1) intravesical projections, (2) median bars, (3) fibrotic prostate, (4) postprostatectomy obstruction of a diaphragmatic type, (5) certain types of carcinoma and (6) extravascular enlargements. Cystoscopic examinations with measuring of the residual urine are essential.

The types of patients to whom the method is applicable represent all of the poor risks. Seventy-five of Everidge's patients have been followed up. Their average age was sixty-four and seven tenths years. Twenty-one were over seventy years, one was ninety years and on average eighty-four years. Twenty-three had acute retention of urine and eight had retention with overflow. Three had 60 oz. and one had 50 oz. of residual urine. Three had carcinoma and three a postprostatectomy obstruction.

The three postoperative deaths in Everidge's cases were all those of patients who would probably have died after an open operation.

In fifteen cases suprapubic drainage was necessary. In fifty-three electrocoagulation alone was done, in four a diathermy punch operation, in thirteen a resection and in two electrocoagulation and resection. Some bleeding occurred but the most serious complications were due to sepsis. Operation as followed by mild incontinence but on the whole the results were gratifying.

Everidge believes that the per urethral operation will continue to be used but that prostatectomy cannot yet be abandoned.

HAMMOND said that except in clerics of the Hadler the results have obtained with the per-



urethral punch operation have been less satisfactory than those he has obtained by open operation. With regard to resection he has come to the following conclusions:

1. When the obstruction is at the bladder neck, trans-urethral resection is preferable to prostatectomy.

The treatment of the enlarged prostate by resection is still in the experimental stage. For the present it should be confined to cases with a contra-indication to prostatectomy.

3. Prostatectomy is still the operation of choice for the simple enlargement.

RICHES said that if the greatest use to be made of the trans-urethral operation it should be employed on its merits and not merely for cases too far advanced for prostatectomy. The trans-urethral operation gives excellent immediate results in cases of relatively early glandular enlargement in carcinoma and in certain cases of fibrous prostate and calculous prostatitis. However it is necessary to find better methods of improving renal function after preliminary drainage and to get patients to come for treatment early.

JARVIS characterized per urethral treatment as wrong in principle and asked why a proved operation such as prostatectomy should be abandoned for an unsatisfactory partial operation.

MORSON emphasized the grave danger of sepsis following trans-urethral procedures.

WISNIEWSKI WHITE also called attention to the danger of sepsis in trans-urethral treatment. He emphasized that the trans-urethral operation is not to be regarded as a minor procedure and that following its use the urine is filled with pus and debris for weeks and residual urine is a constant source of danger. He stated that in the cases of patients with uræmia he uses an indwelling catheter and considers it safe to undertake a cutting procedure only when he is satisfied that the condition has been improved.

WHITNEY stated that the prostatic symptoms are due to a pathological prostate producing obstruction and that the only satisfactory way to deal with such an obstruction is enucleation by the suprapubic or perineal route. Until there is convincing proof that the entire prostate can be removed by the per-urethral operation so that no septic foci are left, he will regard this operation as against the practical principles of surgery. He believes that at the present time the per-urethral operation is indicated only for removal of the prostatic bar with the punch and this is an infrequent condition. While the fibrosed prostate might be treated by the per-urethral method, he has never seen a case which could not be treated by the suprapubic operation. **ELMER HESS, M.D.**

Vain ede B. Lavage n the Treatment of Chronic Vesiculitis (Le traitement des écoulements chroniques par le lavage des prostatocystites chroniques). *J. d'urologie* 1933 xxx 62.

The importance of the local and distant effects of chronic gonococcal infection of the seminal vesicles

cannot be overemphasized because too often patients who carry a latent infection are discharged as cured. One of the most important signs of this infection is a persistent morning drop. After thorough treatment of the urethra and prostate and absence of the urethral catarrh a persistent morning drop can come only from the seminal vesicles.

Other symptoms of infection of the seminal vesicles are local pains in the perineum, penis or testicles, painful ejaculation and general pains of a rheumatoid character. Recurrent attacks of epididymitis are a certain indication of seminal vesiculitis. Premature ejaculation and impotence are common. As a result of these symptoms, some neuroses are prone to develop. The rôle of the seminal vesicles as foci of infection is well recognized, and the distant manifestations of such foci are numerous and often grave.

When the standard treatment of the urethra, prostate and seminal vesicles leaves persistent lesions in the seminal vesicles, lavage is necessary. The author prefers simple puncture of the vesicles according to LUY'S modification of BEISEL'S operation. The solution he employs is a 50 per cent colloidal solution. The results have been most gratifying. Eight cases are reported in detail. Most remarkable among them was a case of chronic generalized eczematoid dermatitis which was promptly cured by elimination of the vesicular infection. **ALBERT F. DE GROOT, M.D.**

Counsellor V. D. Cryptorchidism The Treatment and Results in 100 Cases. *J. U. I.* 1933 xxx 3.

Approximately 90 per cent of testes descend into the scrotum at about the eighth month of fetal life. For some unknown reason, 10 per cent are not completely descended at birth; a few do not descend until a few weeks after birth and some remain undescended. The gubernaculum, perhaps the structure at fault in non-descent of the testis. The cause may be a congenital defect or trauma at birth. The spermatic vessel is shortened by fibrous bands between them and the tunica vaginalis and peritoneum. If the spermatic vessels are divided in an attempt to lengthen the cord, the testis will atrophy.

On the basis of our present knowledge, the chief indications for orchopexy are the prevention of atrophy of the testis and the preservation of spermatogenic function. Evidence previously established by others clearly prove that if a testis is not placed in the scrotum before puberty, progressive degenerative changes will occur in the tubules. Moreover, a testis which is retracted near the pubic spine or is somewhat immobile in the middle of the scrotum will not develop in the same way as the testis which is freely movable in the dependent part of the scrotum.

The type of orchopexy to be carried out must be one which will ultimately maintain the testis in the bottom of the scrotum. It is important to protect the spermatic vessel completely without injury and to excise the tunica vaginalis. If the scrotum is rudimentary or retracted, some type of scrotal bag can

is essential to secure the best results. The most favorable time for the operation is before the fourteenth year of age. However the testis may be placed in the scrotum satisfactorily even in neglected cases and this should be done whenever possible. If the testis on the other side is normal orchidectomy is often indicated in neglected cases if the patient is beyond the age of puberty, the testis is markedly atrophic and the spermatic vessels are unusually short. Replacement of the testis in the abdomen with section of the vas deferens or if the non-descending is bilateral replacement between the transversalis fascia and the peritoneum may be indicated in a small percentage of cases.

Of the patients whose cases are reviewed the youngest was under four years, the oldest was sixty-four years. 62 per cent were under twenty-five years and 34 per cent were between five and fifteen years of age.

The operative procedures in these cases included replacement of the testis in the scrotum by the Bevan operation or some modification thereof, the Torek operation and orchidectomy. The Torek operation proved to be the most satisfactory procedure, being successful in 93.3 per cent of the cases.

#### MISCELLANEOUS

Cole H. N. Lymphogranuloma Inguinale, the Fourth Venereal Disease. Its Relation to Stricture of the Rectum. *J Am U* 12: 1933: 41, 1969.

Lymphogranuloma inguinale is a distinct granulomatous entity involving the lymph nodes. It is generally of venereal origin. After an incubation period of from one to several weeks and not neces-

sarily accompanied by a primary sore a chronic bubo formation appears and goes on to suppuration.

In the female and rarely in the male the lymph nodes around the lower portion of the rectum may be involved. Frequently the inflammatory reaction results in stricture of the rectum. Occasionally in the female there may be involvement of the lower vaginal wall and labia in the form of a chronic ulcerative elephantiasis—esthiomene.

The cause of lymphogranuloma inguinale is a filtrable virus which can be transferred to several of the lower animal (monkeys, rabbits, white mice, guinea pigs).

A specific diagnostic cutaneous reaction (Frei reaction) has been evolved. The emulsion material from unbroken involved nodes is used as the antigen.

In the cases of a series of patients suspected to have had the disease previously a positive Frei reaction was obtained. Among them were two with a history of bubo thirty years previously and one with such a history between thirty and forty years previously. Apparently the allergy of the skin persists throughout life. Thirty-seven cases of lymphogranuloma inguinale with bubo formation, two cases of esthiomene and thirteen cases with anorectal symptom and stricture of the rectal wall showed a positive Frei reaction and many gave no history and presented no signs of syphilis or tuberculosis.

Patients with bubo formation who were seen early responded comparatively well to surgical excision of the involved nodes or to intravenous injections of a solution of antimony and potassium tartrate.

As the case reported were all seen in one clinic in the course of a year the author concludes that the condition is by no means rare in America.

FLYNN HES. M. D.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES JOINTS MUSCLES TENDONS ETC

Abel A. L. Thomson G. and Hawley L. M.  
Generalized Osteitis Fibrosa. A Case Successfully Treated by Removal of Parathyroid Tumors. *Lancet* 1933 cccv 523

Generalized osteitis fibrosa is characterized by widespread resorption of bone which is associated with hyperplasia of one or more parathyroid glands, hypercalcemia and a marked increase in calcium excretion. It was first described in detail in 1891 by von Recklinghausen who distinguished it from osteomalacia. In 1907 Erdheim noted the association of parathyroid tumors and osteomalacia and since that time many cases showing this association have been reported. Mandl in 1926 was the first to explore the neck and remove a parathyroid tumor in a case of generalized osteitis fibrosa. In recent years much attention has been given to these cases and careful biochemical studies have been made. It has now been established that the lesion is associated with a high blood calcium, a lowered blood phosphorus and an increase in the blood phosphates. The excretion of calcium in the urine is greatly increased. These changes are similar to those produced by large doses of parathormone.

Generalized osteitis fibrosa occurs at almost all ages in both sexes but is most common in middle aged women. Apparently some unknown stimulus causes hyperplasia of the parathyroid glands which results in the excessive production of parathormone and the hyperparathyroidism causes a hypercalcemia at the expense of the osseous reserves, the increased excretion of calcium in the urine representing the attempt of the body to maintain the normal calcium balance of the blood.

At autopsy the bones are found to be deformed and so softened that they can be cut with a knife. They contain many cysts and red brown nodules which may erode the cortex. Pathological fractures are common. The outstanding changes shown by microscopic examination are common. The outstanding changes shown by microscopic examination are an osteoporosis with lacunar resorption and fibrosis of the marrow. Collections of large osteoclasts and deposits of new spongy bones are also seen together with cysts resulting mainly from degenerative changes. The parathyroid tumors are lobulated, range from yellow brown to red and may reach the size of a hen's egg. The size of the tumor seems to be unrelated to the severity of the bone lesion and the presence of the tumor may be easily overlooked even at autopsy. It is seldom possible to palpate the tumors as they are often hidden deep in the neck or upper thorax.

The symptoms of parathyroid tumor, etc., all bone pain and tenderness associated with obvious tumors, deformities or fractures. In more advanced cases there may be muscular hypotonia, gastrointestinal disturbances, thirst, polyuria and emaciation. Roentgenography reveals generalized rarefaction of the skeleton with numerous cysts. A segment of bone removed from the tibia will show the porous bone changes even if it is taken from an apparently uninvolved area. Chemical examination shows the blood calcium to be from 12 to 20 mgm per 100 cc. as compared with the normal of from 9 to 11 mgm, the plasma phosphorus to be from 1 to 2 mgm, as compared with the normal of from 2.5 to 3.5 mgm, and the plasma phosphates to be sometimes over 1 unit per cubic centimeter as compared with the normal of 0.15 unit. On an ordinary diet the excretion of calcium in the urine may be increased up to from 10 to eight times the normal of 0.3 gm in twenty-four hours.

In the differential diagnosis, focal osteitis fibrosa must be considered first. In this condition the bone changes are similar to those of generalized osteitis fibrosa but are localized in one area as shown by roentgenograms of the skeleton. The blood calcium and phosphorus are normal.

In Paget's disease the outstanding change is periprosthetic proliferation of bone and the parathyroids are not involved. The blood calcium and phosphorus are normal but the plasma phosphatase is high.

Osteomalacia is an adult form of rickets due to a deficiency of vitamin D. It occurs chiefly when treatment has been inadequate and responds to antirachitic measures. Its frequency in women may be due to pregnancy and lactation. The blood calcium and phosphorus are low. The parathyroid hyperplasia is probably compensatory and secondary, whereas in osteitis fibrosa it seems to be primary.

In cases of multiple myelomata the tumors are located mainly in the flat bones and Bence-Jones protein appears in the urine. Bone destruction may cause an elevation in the blood calcium but the blood phosphorus is also increased.

Without treatment the prognosis of generalized osteitis fibrosa is unfavorable. The condition slowly progresses, causes pain, crippling and emaciation and eventually terminates in death. Following removal of the parathyroid tumor the bone pains usually cease immediately, the chemical character of the blood returns to normal, metastatic calcium deposits in the lung and elsewhere disappear and the general health improves. The symptomatic improvement may be more marked than the improvement in the bone changes seen on the roentgenogram.

The treatment should consist of a few days of rest on a high alkaline diet followed by respiratory therapy.

neck under general anesthesia and removal of the parathyroid tumor. Wide exposure and a thorough search are necessary. An enlarged gland may be behind the esophagus in front of the upper dorsal vertebrae may be associated with the thymus behind the sternum or may be embedded in the thyroid.

Postoperative treatment is important as hypocalcemia or tetany may develop. A high calcium diet and the administration of calcium lactate by mouth in large doses (from 30 to 60 gr three times a day) should be ordered. At the first sign of tetany calcium should be given intravenously and if the tetany persists 30 units of parathormone should be given hypodermically three times a day. Calcium therapy is indicated and blood calcium determinations should be made occasionally for several months after the operation.

The discussion of the disease is followed by the detailed report of the case of a woman fifty-eight years of age who had become gradually weaker over a period of two years and had developed a painful swelling over the left tibia. Roentgen examination showed the swelling to be a cystic bone lesion and biopsy revealed the changes typical of osteitis fibrosa. The calcium content of the blood serum was 14 mgm and the phosphorus of the plasma 18 mgm. Roentgenograms showed other cystic lesions in the vertebrae, scapula and mandible and the bones of the forearms. A high calcium diet for ten days was followed by a thorough exploratory operation of the neck and the removal of enlarged parathyroid glands. Three days after the operation improvement in the blood calcium was noted and at the end of several weeks the physical condition was improved and the bone pains had ceased. Nine months later the general condition was still improving.

CHESTER C. GLEY, M.D.

Zampa G. Anaphylaxis as a Cause of Certain Joint Disease (Lo stato anafilattico nell'artrite acuta e nella poliartrite). *Chirurgia, ginecologia e obstetricia* 1933

The most striking examples of anaphylactic joint manifestations are the arthralgias, joint effusions and true allergic inflammations of the joints not infrequently seen in the so-called serum sickness accompanied by skin exanthems, fever, low blood pressure and eosinophilia.

In experiments on rabbits the author found that joint inflammation could be produced by sensitizing the animals first with serum and after a suitable incubation period injecting a small amount of the same serum into the joint cavity. This is an intra-articular allergic phenomenon. The severity of the joint inflammation varies in proportion to the amount of serum used in the sensitizing and intra-articular injections.

In another series of experiments Zampa found that inflammations of the joints could be brought about by sensitizing the animal with heterologous protein and then injecting a small amount of antigen

substance into the joint cavity by a technique similar to that used for Auer's phenomenon. Auer found that when rabbits were sensitized with horse serum and given intraperitoneal re-injections after a suitable incubation period light rubbing of the skin of the ear with xylol after about half an hour caused edema and irritation of the skin whereas these phenomena were not produced in control animals not given the injections. Later he found that the same effect could be produced with other irritants and that therefore in a subject in a condition of anaphylaxis the action of different irritants may cause localized inflammation.

On the basis of these observations it seems probable that some of the joint diseases occurring in man are caused by an anaphylactic condition or protein shock. Zampa suggests that a change in protein metabolism or the repeated ingestion of heterologous proteins may result in the formation of toxic substances with an antigenic action which become localized in the joints being attracted there by irritating factors.

ALFRED COSS MORGAN, M.D.

Pachne E. and Bracco L. Changes in the Length and Caliber of Voluntary Muscle Fibers When the Distance Between Their Insertions Is Shortened or Lengthened (Sui mutamenti dellunghezza e del calibro delle fibre muscolari durante consecutivi allungamenti ed allungamenti consecutivi). *Atti del congresso internazionale di fisiologia e patologia sperimentale* 1933

Experiments were performed on rabbits to determine the effect on muscle fibers of relaxing the muscles by shortening the distance between their points of insertion or stretching them by lengthening that distance.

In the first group of experiments the radial muscles were detached from their normal insertion at the carpus and their free head fixed to the radius at the point to which they retracted. The muscles continued to function as before. At first their fibers decreased in length and size from disuse but they then gradually increased until the caliber of the muscle was greater than at first. However there was some loss of weight which showed that the increase in caliber did not entirely compensate for the decrease in length. There was no special decrease in the number of nuclei in the period of relative atrophy and no increase when the muscles increased in size.

In another group of experiments two ribs were brought close together by ligature immediately behind the insertion of the serratus magnus muscle so that the intercostal muscles between them were shortened and the muscles between the ligated rib and the ribs next to them were lengthened. In these experiments there was no question of the resumption of function. The shortened muscles between the ligated ribs remained shortened and their caliber decreased. The elongated fibers below the ligated ribs remained elongated without any special change in the caliber.

LEONARD COSS MORGAN, M.D.

Mitchell G A G The Radiographic Appearances  
In Spondylolisthesis B 1 J Radiol 1933 vi 573

In order to appreciate the variations in the roentgenographic appearance of spondylolisthesis a knowledge of the causes of the condition is essential. Although the exciting cause is always some form of trauma there are usually more important predisposing causes. Among the latter are unilateral or bilateral defects in the neural arch of the last lumbar vertebra fractures of the first sacral or fifth lumbar articular processes absence or a symmetry of the increased obliquity of the sacrum or its superior articular facets pressure deformity from prolonged strain of the fifth lumbar vertebra and various pathological processes of the lumbosacral joint.

The most important predisposing factors are defects in the neural arch of the fifth lumbar vertebra between the superior and inferior articular processes. These occur in about 5 per cent of all spines. They are usually bilateral and congenital. Similar defects have been found in the cervical and thoracic vertebrae.

The lumbosacral articular processes and the ligaments and the intervertebral disks in preventing the fifth lumbar vertebra from sliding forward on the superior surface of the first sacral vertebra which is normally tilted about 42 degrees from the horizontal. When there are defects in the neural arch the antiluxation action of these processes is destroyed and joint stability depends on the action of ligaments and muscles. Under such conditions spondylolisthesis may be brought about by injury heavy work pregnancy or a gain in weight. The affected vertebra is split in two the anterior part including the body pedicles and superior articular processes sliding forward and the posterior part including the inferior articular processes laminae and spinous processes remaining *in situ*.

The diagnosis of spondylolisthesis depends upon roentgenographic studies. These have demonstrated that the condition is more common than was formerly supposed and is as frequent in males as in females. In cases in which the dorsosacral angle is exaggerated anteroposterior views may be misleading. More reliable are lateral roentgenograms. If good lateral views are not obtainable the diagnosis may be made by certain pelvic measurements. Normally the bitrochanteric length is slightly greater than the length of the iliac crests. In other words a line drawn between the trochanters is longer than a line between the iliac crests. In spondylolisthesis the reverse is true. When care is taken to center the central ray or tube properly these lines may be measured on roentgenograms. A helpful diagnostic finding often presented by the anteroposterior roentgenogram in spondylolisthesis is the Y shaped shadow cast by the up-tilted laminae and spinous process of the separated posterior portion of the fifth lumbar vertebra.

Ullmann's test consists in drawing a line perpendicular to the superior surface of the first sacral

vertebra at its anterior edge. This perpendicular always cuts through the body of the fifth lumbar vertebra in spondylolisthesis but as it occasionally does so also when no displacement is present it is not a reliable diagnostic aid.

Defects in the interarticular neural arch are visible in roentgenograms in about 10 per cent of cases of spondylolisthesis. However it is seldom possible to tell whether such defects are congenital or traumatic and many defects cannot be demonstrated at all.

The position of the spinous process of the fifth lumbar vertebra is not constant in spondylolisthesis. It may be in the normal position or displaced forward or backward depending on the underlying cause of the disorder. When there is an interruption of the neural arch the fifth lumbar vertebra measured from the front of the body to the tip of the spinous process shows a variable degree of anteroposterior elongation as compared with the fourth lumbar vertebra. This elongation is a valuable diagnostic sign but it does not exist when the vertebra is displaced *in toto*.

CIESZKA C. GRY MD

Pol A The Roentgenographic Diagnosis of  
Tuberculous Costitis (Lindanne rad gra  
nella costae tuberculare) Rad 1 m 1933 x  
133

Pol discusses the pathological anatomy and the roentgenographic characteristics of osseous and osteo-articular tuberculosis on the basis of 60 cases of costalgia. In 75 per cent of these cases the lesion was primarily osseous and in 25 per cent it was synovial. In 50 per cent it involved the costal portion in 30 per cent the head of the femur and in 20 per cent the neck of the femur. The author states that although the roentgenogram may be negative even after pain, contracture and disability have developed there are cases of osseous tuberculosis in which roentgen examination yields conclusive data much earlier than any other type of examination. Moreover it is only by roentgen examination that the type and extent of the lesions may be determined.

He describes in detail the changes seen in the roentgenogram in cases of costalgia: osseous atrophy and inflammatory changes, changes in the joint surfaces and changes in the appearance of the soft parts in the shape and position of the bone. The characteristic findings are shown by forty three roentgenograms taken at various stages of the lesion: invasion of the joint in the initial stage the stage of the prodromal stage the stage of the destructive and the stage of repair. On the basis of these findings the author emphasizes the important points in the differential diagnosis.

Pol believes that roentgenological study is of importance in the determination of the anatomopathological character as well as the extent and evolution of the lesion and is therefore an indispensable aid in the diagnosis of lesions of the hip.

ECCKE T. T. LEDDY MD

## SURGERY OF THE BONES JOINTS MUSCLES TENDONS

Mittner I J and Hu C H Osteochondritis of the Head of the Femur An Experimental Study *Arch S 72* 933 1933 645

Three groups of experiments on animals were carried out to determine whether a deficiency in the circulation of the head of the femur would result in changes simulating Legg Calé Pe thes disease

In the first group alcohol was injected into the periosteum of the neck of the femur This had no influence on the growth of the head or the neck

In the second group alcohol was injected into the periosteum of the neck of the femur and the periosteum stripped back from the epiphyseal line to the base of the neck This produced no gross evidence of disturbance of growth

In the third group of experiment the round ligament was ligated the periosteum stripped back from the neck and a ligature placed around the neck This procedure caused a disturbance of growth of the head The head appeared flattened and the cancellous surfaces were roughened and depressed

From the results of the experiments the authors conclude that impairment of the circulation to the femoral head causes gross and microscopic changes which are similar to those found in Legg Calé Perthes disease  
ELLY J BERKHEIMER MD

Masturzi A The Roentgenological Findings in Traumatic Lesions of the Foot (Lundgren and Carlsson) *Arch Surg 67* 1933 1031

Masturzi presents the findings of a study of fractures of the foot from the clinical and roentgenological points of view and reports a roentgenogram a number of typical and atypical cases he has seen He emphasizes the importance of roentgen ray examination following injuries to the foot and the necessity for a careful technique in this examination  
FREDERICK T LEE MD

### FRACTURES AND DISLOCATIONS

Melle J The Influence of Vitamin D on the Consolidation of Experimental Fractures (Lundgren and Carlsson) *Arch Surg 67* 1933 1031

The effects of irradiated ergosterol on the consolidation of fractures in experimental animals have been variable The anation seems to be due to several factors such as the dose of ergosterol the species age and diet of the animal and the duration of the experiment

The original observations of Pfannenstiel (1922) have been widely confirmed When animals are given excessive doses of irradiated ergosterol they develop diarrhoea which leads to death within from ten to forty days and necropsy disclose extensive calcification chiefly of the arterial system the myocardium the kidneys and the stomach

The intoxication is favored by a diet rich in calcium Very different effects are produced by a diet

poor in calcium Toxic symptoms appear degenerative lesions and calcification are slight absent and there is a marked osteoporosis The calcium phosphorus ratio in the diet is important deviations from the normal in either direction are harmful When the quantity of calcium is optimal and the quantity of phosphorus is excessive the tendency between the therapeutic and toxic doses becomes reduced

Adult animals are more sensitive to excessive amounts of Vitamin D than young animals dog is an exception

Rachitic animals tolerate larger doses than normal animals Thymectomy decreases and splenectomy increases the toxicity of Vitamin D

The dose of irradiated ergosterol which will produce toxic symptoms is between 5000 and 10000 rachitic units

The hypercalcaemia following the administration of Vitamin D is either exogenous or endogenous depending upon the quantity of calcium in the When the calcium intake is low the calcium balance becomes negative and there is rarefaction of skeleton Under these conditions the intestinal excretion of calcium is reduced and the excretory calcium in the urine is increased The change in the metabolism of phosphorus roughly parallels those of the metabolism of calcium

The changes in the bones consist essentially of decalcification and hypercalcification One succeeds the other Decalcification affects primarily the ribs where it produces a picture somewhat resembling that of experimentally produced rickets There is resorption in the metaphysis which leads to fracture In this change the osteoclasts play a minor role Endochondral osteogenesis is arrested and there is an intense hyperaemia of the marrow In these changes have been produced the effects of Vitamin D has usually been combined with diet low in calcium

Young animals given moderately large doses of ergosterol show increased density of the bones calcification of the growth cartilage and direct replacement of the cartilage into bone The latter changes lead to arrest of growth

It appears that up to a certain dose irradiated ergosterol produces increased density of the bones When this dose is exceeded rarefaction occurs The two processes may occur simultaneously in the bones and the teeth these tissues acquire an alveolar appearance

In view of these facts the authors experiments were planned to study the effects of varying doses of irradiated ergosterol on the repair of fractures The experimental animals were rats and rats Fractures were produced in either the bones of the hind foot or the fibula and the development of callus was studied roentgenographically and histologically

In young rats doses of 1000 antirachitic units retarded the formation of the callus while doses from 20000 to 40000 units delayed it

## INTERNATIONAL ABSTRACT OF SURGERY

In adult rats a retarding action on callus formation was noted whenever the dose of ergosterol reached from 7500 to 10000 units. When fewer than 1000 units were given callus formation was stimulated.

Histological examination on the twenty first day after the fracture showed that the development of the osseous callus in the control rats was well advanced but less advanced than in the rats receiving small amounts of Vitamin D. The rats receiving massive doses of Vitamin D showed only fibrous calluses. The differences between the control animals and those receiving large doses of Vitamin D were noticeable as late as the fifty fourth day.

Examination of the blood revealed that 1000 units of Vitamin D were about as effective in raising the blood calcium as massive doses.

In a study of the favorable effect of Vitamin D on the consolidation of the fractures it was found that the optimal dose was between 50 and 1000 units. The action of the vitamin was operative between the fourteenth and twenty-eighth days. During this period the callus was chiefly cartilaginous and it appeared that the action of the Vitamin D was exerted chiefly on cartilage. This observation is in agreement with the mechanism of cure in experimental rickets.

The unfavorable effect of an excessive dose of Vitamin D on the callus appeared later in young animals than in adults. In both the cause was the generalized demineralization of the skeleton.

Frankau C A Manipulative Method for the Reduction of Fractures of the Surgical Neck of the Humerus. *La J 933* 21 755

The manipulative method described in this article has been used by the author in five cases of fracture of the surgical neck of the humerus. Frankau believes that in fractures of this type reduction effected under anesthesia is most easily and simply effected by exerting strong traction in the line of the long axis of the arm for several minutes and then adducting the arm across the trunk while continuing the traction. This procedure permits accurate reposition of

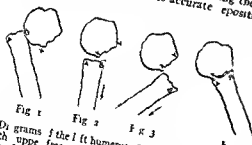


Fig 1  
Fig 2  
Fig 3  
Fig 4

Diagrams illustrating the manipulative method for the reduction of fractures of the surgical neck of the humerus. The diagrams show the arm in various positions during the reduction process, including traction and adduction.

the fragments. After the reduction the arm should be immobilized for one week and at the end of that time active movements permitted gradually. Complete restoration of function is generally obtained in six weeks.

Arefian H Fractures of the Lower End of the Humerus in Children (U ber F kt ren des un t n Hum ru endes bei k ndem) *Id k t S d 1035* 1 u S pp xxvii

The author describes four types of fracture of the lower end of the humerus: the supracondylar fracture, fracture of the median epicondyle and condyle, fracture of the lateral condyle and condyle, and

the fracture of the supracondylar fracture in epiphysis which is explained by the late ossification of the epiphysis which is responsible for a difference in elasticity in the lower end of the humerus. Supracondylar fractures of the humerus are usually due to falls in which direct force plays a minor part and indirect force a major part. They occur five times more frequently on the left side than on the right side.

As a rule the line of fracture as seen anteriorly runs almost transversely and often also slightly upward from before backward. The distal fragment is usually displaced posteriorly and medially. On thirty-one cases twenty-eight showed a diminution of from 3 to 8 degrees one an increase of 11 degrees and two no change in the valgus. A frequent diminution of the valgus is the supracondylar joint is the flexor-extensor mobility of the elbow joint is diminished by an average of 22.5 per cent especially on extreme flexion and extension. In six of the cases reviewed extreme extension was greater the distal fragment healing with a more or less marked diminution of the normal axial angle anteriorly because during the reduction and fixation too little flexion was applied. After such a fixation the free end of the humerus and its articular portion are almost always greater than normal. In fifteen of the cases there was an elongation of from 1 to 5 mm and in four cases a shortening of from 1 to 5 mm of the upper arm. In eleven cases there was no change. In nine cases the circumference of the upper arm remained unchanged in 10 cases it was increased from 5 to 7 mm and in 10 mm. A developmental acceleration was often noted in the ossification centers after the fracture.

Especially abundant callus formation was often after unsatisfactory reduction and late reduction of reduction under anesthesia with flexion of the elbow joint and pronation of the forearm. Special attention must be paid to extension of the normal shoulder and wrist joints must be immobilized and the forearm positioned. If the control case given

Vertical text on the right margin, likely a page number or reference.

shows the reduction to be unsuccessful wire extension to the olecranon or the proximal portion of the ulna in vertical suspension is indicated. Surgical treatment is indicated only in nerve and blood vessel complications and so called completely neglected case. Early mechanotherapy is contra indicated but active motion not including the fixation area should be begun as early as possible.

In fractures of the median epicondyle and condyle in which the dislocation is slight good results are obtained by conservative treatment. If the dislocation is marked and the fragment has penetrated the joint surgery with special attention to restoration of the lateral ligaments is indicated. It is of little importance whether the fragment is fixed or extirpated. If the fragment is large fixation is advisable but must be done accurately. In cases in which a part of the median trochlear region is also avulsed a poor result is to be expected. Immobilization in flexion and pronation are advisable at first for the relief of pain and hemorrhage. The flexion-supination position should be avoided.

In fractures of the lateral condyle in which the dislocation is very slight conservative therapy is indicated. If the dislocation is moderate and non-operative reduction has failed to restore the fragment to its place surgery is necessary. If the fragment can be easily restored to its place at operation and well fixed in position osteosynthesis is indicated but if the reduction and fixation of the fragment prove to be difficult and not very exact extirpation is indicated. If the dislocation is marked from the start operation should be done immediately. After extirpation the lateral condyle shows striking power of at least partial regeneration. Extirpation is indicated also when the viability of the fragment appears questionable. In osteosynthesis temporary nailing may be done and silk and wire but not catgut may be used for suturing.

In condylar fractures non-operative treatment can be used only rarely and then only when the dislocation is very slight. If osteosynthesis is necessary in addition to open reduction a sling should be given for consideration. LOUIS NEALE, M.D.

**Mutel.** Open Reduction of Congenital Dislocation of the Hip (Fed. t. ngia l. ed. s. l. t. con. g. t. l. ed. l. ha. he). *Revue de l'orthop.* 1933, 1, 38.

Mutel states that in cases of congenital dislocation of the hip closed reduction is the method of choice in France but open reduction must be done in cases in which reduction is impossible by the closed method and those in which the femoral head will not remain in the acetabulum after closed reduction.

He discusses the early methods used by Hoffa, Lorenz, Broca, and Kirmisson with their high mortality and high incidence of unsatisfactory results. He next discusses the following obstacles to reduction:

1. Skeletal obstacles such as abnormalities of the acetabulum, femoral neck, and femoral head. Methods of correcting these are described in detail.

2. Abnormalities of the ligaments, adhesions, and interposition of the capsule between the head of the femur and the acetabulum.

3. Difficulties due to the four major groups of muscles around the hip—the pelvitrochanteric, adductor anterior, and posterior groups.

After taking up the various means of diagnosing the condition such as roentgenography and injection of the capsule, Mutel describes the most frequently used routes of approach to the hip joint for open reduction. These are divided into two groups: (1) the internal and (2) the external or antero-external. There is a considerable difference of opinion with regard to the methods of obtaining extension and the necessity for extension. The chief method used are continuous traction, traction with a plaster spica, and the use of the Thomas splint.

The technique of operation for young children which was described by Putti in 1931 is given in detail. For older children, Deutschlaender advises performing the operation in two stages. The procedures of LeFort, Kidner, Lane, Groves, and Bade are described and shown by illustrations. The author reviews also the indication for resection of the femoral head and through the femoral shaft.

In conclusion he gives a statistical résumé of the results obtained by different surgeons and compares the various techniques. Of the cases of young children closed reduction can be accomplished in about 97 per cent and gives satisfactory results in 75 per cent. In about 8 per cent (irreducible or refractory cases) open reduction is justifiable. In the cases of older children the results are not so satisfactory and the method must be chosen according to the requirements of the case. MARSH W. TOOE, M.D.

**Arce, J. and Introzzi, A. S.** Ischemic Necrosis of the Proximal Fragment of Intracapsular Fractures of the Neck of the Femur (Necrosis is a químico del fragmento proximal de fracturas intracapsulares del cuello del fémur). *Seo. a. ed.* 1933, 1, 77.

The authors report a case of ischemic necrosis of the proximal fragment of an intracapsular fracture of the neck of the femur in which bone grafting and a Whitman operation were performed and the patient as followed for three years after the accident. The clinical history was as follows: pseudarthrosis following a transcervical fracture, bone grafting seven months after the accident, deforming arthropathy evident five months later. Whitman operation 10 years and nine months after the grafting. There are few reports of bone grafting in an epiphyseal site of ischemic necrosis. The authors report it of special value because of the long period of observation, the complete roentgenographic follow-up, and the histological study of the influence of the graft on the evolution of the fracture and the fate of the epiphysis.

The authors conclude that ischemic necrosis is not a simple complication but a distinct disease.



which may be diagnosed both roentgenographically and histologically. It is characterized roentgenographically by early necrosis involving all elements during which the epiphyseal shadow preserves its density. This stage is followed by a stage of revascularization evidenced by irregular leopard skin absorption, the changes in the conformation and structure of the head being in proportion to the fibrovascular invasion. Even when the patient is first seen a year or more after healing of the fracture the diagnosis of necrosis may still be made from the presence of irregular decalcification and flattening of the epiphysis. If the bone has reached a stage of equilibrium the diagnosis must be based entirely on collapse of the epiphysis. When grafting has been done the picture is the same except that there is more pronounced osteopenia in the vicinity of the disintegrated graft.

After a transcervical or subcapital fracture has been reduced and immobilized it should be subjected to roentgen ray examination for impure necrosis every two weeks. If necrosis is found, bone grafting should be performed. In cases diagnosed late and showing serious arthropathy an operation of the Whitman type is indicated but should be delayed until the local changes are ended.

Following a review of the blood supply of the head of the femur under normal and pathological conditions the authors discuss the roentgenographic diagnosis and the correlation of the roentgenographic and histological pictures of ischemic necrosis and review the cases of this condition which have been reported in the literature.

The article contains roentgenograms and photomicrographs and is supplemented with a bibliography.

J. E. MOORE, M.D.

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Leriche R Fontaine R and Frier P Indications and Results of Arteriography in Arteritis (Indications et résultats de l'arteriographie dans les artérites) *Presse Médicale* 1933 41 00

The authors believe that the present technique of Dos Santos for arteriography is safe. This was not true of the original methods in which sodium iodide abrodil or uroselectan was the medium for injection. These substances cause so much pain that general or regional anesthesia is necessary. Moreover they require exposure of the artery by a surgical incision to prevent their deposition in the tissue and the incision must be done in a roentgenographic room where it may be difficult to preserve surgical asepsis. Because of these difficulties the use of arteriography was formerly limited.

In the technique used by Dos Santos today the contrast medium injected is Thorium V. This substance is prepared as thorotrast. It was originally used for visualization of the liver and spleen. Its injection causes no pain and its extravasation is necrotic. It is without a deleterious effect on the artery even in the presence of arteritis. Hence its injection for arteriography may be done by simple arterial puncture and requires no more technical preparation than that required for venapuncture.

Twenty-eight arteriograms were obtained by the authors in twenty-one cases of arterial disease. Among the latter were six cases of senile arteritis, seven cases of diabetic gangrene, four cases of Buerger's disease, three cases of vasomotor crises simulating Raynaud's disease, and one case of arterial aneurism.

The information obtained was of great value in determining the amount and location of the obliteration, the condition of the artery proximal to the obstruction, and the extent of the collateral circulation. Such information constitutes a logical basis for prognosis. An outstanding observation was the segmental involvement of the arteries in diabetic and senile arteritis. The vessels most frequently involved were the superficial femoral, the popliteal, and the posterior tibial.

Buerger's disease and atheromatous sclerosis may be differentiated on the basis of the changes in the vessels proximal to the obstruction. In the former condition the proximal arteries are straight with regular contours but with a diminishing caliber, whereas in the latter condition they are sinuous and undulating with irregular contours and an increasing caliber. True and false Raynaud's disease may also be differentiated by arteriography. In vasomotor crises simulating Raynaud's disease the nature of the condition is revealed by the demonstration of an

obliteration. Arteriography demonstrates also the exact location and condition of an aneurism.

The authors believe that with present methods arteriography has a wide range of usefulness in arterial disease. HERMAN E. PEARSE, M.D.

Fick W. The Effect of Arteriovenous Aneurisms on the Circulation (Kreislaufsirkulation arteriovenöser Aneurysmen) *Deutsche Zeitschrift für Chirurgie* 1933 40 1-11

Fick attempts to answer the following questions with regard to the circulatory changes resulting from arteriovenous aneurisms:

1. Why does compression of the aneurism cause a rise in blood pressure?

2. Why does this compression result in a fall in the pulse rate? Is it a vagus effect? Is it due to dilatation of the right ventricle? Is it caused by hypertonus of the heart muscle? Or is the increased peripheral resistance due to stimulation of the vasoconstrictors?

3. What causes the enlargement of the arteries adjacent to the aneurism, and why do the walls of these arteries show thinning and degeneration?

In his effort to answer these questions Fick reports two cases and cites some experimental findings.

The first case was that of a letter carrier thirty-two years old who was shot in the right thigh in 1916. Good healing of the primary wound occurred. After the war the patient resumed the occupation of letter carrier. Eight years later cramps began in the calf of the injured leg. Twelve years after the injury a crural ulcer appeared. In 1930 examination revealed definite cardiac hypertrophy. The right leg was enlarged, but there were no varices and no venous pulse was palpable. Edema of the joints was observed. A thrill was felt over the vessels above Poupart's ligament. Compression of the afferent artery did not cause a rise in the blood pressure. On May 15, 1930, the proximal artery and the distal artery and vein were ligated. Following the operation the ulcer healed, the heart decreased in size, and the general condition improved.

The second case was that of a waiter thirty-one years of age who was injured in the thigh by a band grenade in 1919 and began having pain in the calf of the leg seven years later. In 1930 examination disclosed cardiac enlargement. Compression of the aneurism caused a rise in the blood pressure and a fall in the pulse rate from 90 to 64 beats per minute. At operation the proximal vessels were found enlarged. The femoral artery and vein above and below the fistula were ligated. The patient recovered and was discharged but returned four weeks later with an abscess in the operative region. Drain

age of the abscess was followed by secondary hemorrhage requiring ligation of the iliac artery. Recovery resulted with only fair function in the limb.

The experimental findings cited are summarized as follows:

1. Ligation of the arteries of a normal limb causes no marked rise in the blood pressure.
2. Occlusion of the afferent artery to an arterial venous fistula causes a rise in the blood pressure.
3. The blood pressure rises following ligation of the proximal vein.
4. Ligation of the distal vessel causes no change in the blood pressure.
5. The venous pressure in the jugular vein is not altered at the time of the blood pressure rise.
6. The blood pressure rise is independent of the filling of the vena cava.
7. Cutting of the vagus nerve, denervation of the vessel, and cutting of the spinal cord or splanchnic nerves has no influence on the changes in pulse and pressure.

From these observations Fick concludes that the changes noted are produced by the alteration of the pressure in the left heart as related to that of the general circulation. FRANZ (Z)

Thurston H F and Lamb E B. Circular Suture of Blood Vessels. *An Experimental Study*. *Arch Surg* 1933 xvii 786

The authors describe their experimental work and draw the following conclusions:

1. Surgical trauma and retardation or distortion of the blood current are the chief factors contributing to the thrombosis which occurs when blood vessels are sutured.

2. Infection plays a minor role as a cause of blood clotting at the suture line. Careful asepsis is essential to prevent breaking down of the suture line.

3. An obstructing thrombus when it occurs usually forms within a few hours after vascular repair. As a rule it is secondary to platelets deposited before the full flow of blood is released.

4. The increase in the blood platelets does not reach its maximum until a few days after the operation, usually too late to influence thrombosis in the segment of repair.

5. Heparin solution is a satisfactory anticoagulant in the suture of blood vessels.

The authors describe a method of suturing with minimal ligation of the collateral circulation.

JOHN J. MULLOY, M.D.

Wright I S and Duryee A W. Human Capillaries in Health and in Disease. *Arch Int Med* 1933 lvi 545

Following a review of our knowledge to date regarding the capillaries in health the authors describe the changes occurring in these vessels in the presence of high blood pressure, low blood pressure, acute nephritis, chronic nephritis, senile arteriosclerosis, toxæmia of pregnancy, polycythæmia vera,

scleroderma, Raynaud's disease, thromboangiitis obliterans, erythromelalgia and arthritis. They then discuss the development of the capillaries in relation to mental development and peripheral of the capillaries in nervous disorders.

J. F. K. AND DORR, M.D.

## BLOOD TRANSFUSION

Wintrobe M M and Landsberg J W. The Blood of Normal Men and Women. Erythrocyte Counts, Hemoglobin and Volume of Packed Red Cells of 229 Individuals. *Bl J Clin Pk Hosp* Balt 1933 lvi 8

The purpose of this article is to supply additional data for the establishment of normal blood values and to consider the relationship of age and geographic differences to these values. Determinations of the erythrocyte count, hemoglobin, and the volume of packed red cells are considered. The authors report the findings of the examination of 299 individuals—86 male medical students, 101 nurses and 112 miscellaneous normal individuals. In addition they cite normal values from the literature bringing the total to about 800 individuals. The results are recorded for each type of determination and each sex in the form of frequency curves, the mean value, standard deviation and coefficient of variation with their probable errors being given.

The mean values from various parts of the United States and Europe are on the whole in close agreement. No significant differences were noted in the blood values in healthy adults at various ages. On the basis of an analysis of the own figures and those of a number of other investigators the authors give the following normal blood values expressed in sample numbers:

	Normal	Range of Normal
Men		
Red cell count millions per cubic centimetre	5.4	4.6-6.3
Hemoglobin grams per 100 cm.	15	13-18
Volume packed red cells cubic centimeters per 100 cm.	47	40-54
Women		
Red cell count millions per cubic centimetre	4.8	4.2-5.4
Hemoglobin grams per 100 cm.	14	13-16
Volume packed red cells cubic centimeters per 100 cm.	43	38-50

In order to obtain a color index of 1 in normal individual it is necessary to choose the value of hemoglobin that normally correspond to 5,000,000 cells. According to the normal data this value is 14.5 in men and 14.3 in women. The authors suggest that in the calculation of the color index for both men and women 14.5 gm. of hemoglobin be employed as the equivalent of 100 per cent.

The desirability of expressing the hemoglobin in grams per 100 cm. rather than in per cent is considered. The authors say: "There is more reason to express other chemical constituents of the blood in



Moreover as they are related to the coagulation time the conclusion may be drawn that transfusion from a universal donor is less satisfactory especially for hemorrhage or at operation in which hemorrhage is to be checked as in cases of icterus. **FRANK (2)**

### LYMPH GLANDS AND LYMPHATIC VESSELS

**Baez M M** Some Considerations on the Visceral Manifestations of Hodgkin's Disease (Algunas consideraciones acerca de las manifestaciones viscerales de la enfermedad de Hodgkin). *Guatemala Medica* 1933 121 337

Following a review of the history of Hodgkin's disease since the first description of the condition by Hodgkin in 1832 Baez describes the symptoms with special emphasis on the visceral manifestations and discusses the diagnosis etiology pathology and treatment. He states that the disease is frequent in Mexico. The typical cases in which adenopathy predominates almost always come to the surgeon while those in which the enlargement of the external glands is not obvious and is overshadowed by visceral or more frequently general symptoms are seen by the internist. The latter are difficult to diagnose. A relatively common cause of failure of diagnosis is the co-existence of other diseases notably tuberculosis. The general symptom may simulate those of a number of subacute or chronic febrile conditions such as tuberculosis Malta fever malaria and sepsis.

The author reports three cases which were diagnosed only in the terminal stage because the adenopathy was not marked and attention was focused

exclusively on the prominent visceral symptoms. In two cases the outstanding symptoms were uncontrollable diarrhoea fever and emacia. In the third case haemoptysis was followed by cough expectoration fever and dyspnoea and at necropsy was demonstrated by the presence of tubercle bacilli in the putum pneumothorax was introduced. The article has an extensive bibliography.

M E. MORA, M.D.

**Fraser J and Meek E C** A Study of the Lymphogranulomata. *Lancet* 1933 1 44

The authors report a case of recurrence of lymphogranulomata which had been controlled by irradiation therapy.

Lymphogranuloma was first described in 1832 by Hodgkin. The authors review the theories as to its relation to tuberculous diphtheroid and streptococcus infections. They are inclined toward the view that it is a form of tumor as only by such a theory do they find it possible to explain satisfactorily the profound disturbances in the life history and economy of the lymphoreticulo-endothelial system. They believe that the condition is at first a local and benign process which later shows cells of less perfect development with mitotic forms and ultimate picture of malignancy with involvement of other glands and tissues. The treatment depends upon the theory regarding the cause.

The authors review the methods of treatment used. They believe that the most successful treatment is irradiation. X-ray irradiation is superior to radium irradiation giving effects which are often dramatic.

M HENRY BURTON, M.D.

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Imperati L. Grafts of Fixed Skin. An experimental Contribution to the Question of Rehabilitation (In est di cute f sata Contal to sjem. t le alla quest one d lla r ab ita z i o n e) *At t i f d chi* 1933 vii 903

The author refers in detail to Nageotte's work. According to Nageotte who studied especially connective tissue there are two parts to every tissue—an interstitial part and a cellular part. The interstitial part not being living substance maintains its plastic characteristics in transplants whereas the included cells die rapidly when they are removed from their natural environment. This conservation of the connective tissue framework is the process essential to the success of transplants. To prevent disintegration of the supporting framework Nageotte resorted to immediate killing of the tissue by means of fixation. From the results of his experiments he concluded that the transplantation of such fixed tissue is soon followed by destruction and removal of the included cells by the mobile cells of the living transplant bed and that this is followed by filling of the empty connective tissue structure with living fibroblasts a process constituting a true revivification of the tissue. A major advantage of the use of the fixed implant or transplant is the possibility of employing heterogenous tissue.

Some investigators have found the described procedure successful both experimentally and clinically whereas others claim that instead of being rehabilitated the implants are replaced by new living tissue. To determine which of the two opposing groups is correct the author carried out experiments on rabbits in which he implanted formalin fixed autogenous homogenous and heterogenous skin and studied the results grossly and histologically after periods ranging from four to fifty days.

After from twelve to twenty four hours gross examination disclosed hyperemia in the bed of the implant probably the manifestation of an inflammatory reaction. This persisted for three or four days. At the end of that time retraction began and the surrounding tissues seemed to return to normal. After from fifteen to twenty days a marginal separation of the implant began and in from twenty four to fifty days the separation became complete leaving a sub-stratum which was red smooth and well advanced in the process of epidermization. Complete restitution of the skin to normal required about one hundred days.

On microscopic examination Imperati was unable to demonstrate a true rehabilitation in the sense of filling of the empty dead framework with living cell

All of the findings pointed rather to a process of replacement of the transplant by regenerative changes in the host.

In conclusion he says that in spite of the failure of true rehabilitation the implants are of value as they form a mechanical protective covering stimulate regeneration and impede the formation of hypertrophic and sclerosing scar tissue.

A. Loci Rost M.D.

Whipple A. O. The Use of Silk in the Repair of Clean Wounds *Ann Surg* 1933 xc iii 66

The author states that healing by primary union may be defined as the restitution of the incised tissues to their normal condition with minimal scar formation and with no discharge from the line of incision or from stitch holes of an exudate which either clinically or bacteriologically indicates infection.

Controllable factors of importance in primary wound healing are proper sterilization of supplies solutions gown gloves and instruments the development of an aseptic sense in the surgical team careful skin preparation careful masking of the nose and mouth of every one in the operating room and limitation to the minimum of injury to the tissues and of the amount of foreign body introduced into the wound. In discussing the last factor Whipple compares the use of silk and catgut clinically and experimentally. In using silk the surgeon must avoid tight sutures mass ligatures dissection with blunt scissors careless hemostasis the use of any but the finest grades of silk combinations of silk and catgut the use of silk in any but a sterile field and continuous sutures. Since adopting a corrected technique in the use of silk the author has noted a marked improvement in the healing of his clean wounds.

A study of wounds in animals which were sutured with silk and catgut showed that a greater tissue reaction occurred when catgut was employed. The results in these experiments confirmed the findings of Howes Harvey and Sooy with regard to wound healing and the tensile strength of wounds.

JOHN H. GARLOCK, M.D.

Pellenc G. The Relation of Postoperative Bronchopulmonary Complication to Anesthesia (Complicatio bronchopulmonaria postoperatoria in rapporto all'anestesia) *At t i f d chi* 1933 xii 60

The author reviews the chief types of anesthesia—ether chloroform nitrous oxide avertin spinal and local—and sets forth the advantages and disadvantages of each. He then reviews the lung complications following 2,311 operations performed at the hospital of S. Giovanni di Dio in Florence in the

Moreover as they are related to the exagulation time the conclusion may be drawn that transfusion from a universal donor is less satisfactory especially for hemorrhage or at operation in which hemorrhage is to be checked as in cases of icterus. FRAXZ (Z)

### LYMPH GLANDS AND LYMPHATIC VESSELS

Baez M M. Some Considerations on the Visceral Manifestations of Hodgkin's Disease. (Algunas consideraciones acerca de las manifestaciones viscerales de la enfermedad de Hodgkin.) *Gac med d Mexico* 1933 30: 3

Following a review of the history of Hodgkin's disease since the first description of the condition by Hodgkin in 1832 Baez describes the symptoms with special emphasis on the visceral manifestations and discusses the diagnosis etiology pathology and treatment. He states that the disease is frequent in Mexico. The typical cases in which adenopathy predominates almost always come to the surgeon while those in which the enlargement of the external glands is not obvious and is overshadowed by visceral or more frequently general symptoms are seen by the internist. The latter are difficult to diagnose. A relatively common cause of failure of diagnosis is the co-existence of other diseases notably tuberculosis. The general symptoms may simulate those of a number of subacute or chronic febrile conditions such as tuberculosis Malta fever malaria and sepsis.

The author reports three cases which were diagnosed only in the terminal stage because the adenopathy was not marked and attention was focused

exclusively on the prominent visceral symptoms. In two cases the outstanding symptoms were uncontrollable diarrhea, fever and emaciation. In the third case hemoptysis was followed by a right pleurisy, fever and diarrhea, and a peritonitis was demonstrated by the presence of bacilli in the sputum peritonitis was in the

The article has an extensive bibliography.

M. E. VOLK, M.D.

Fraser J., and M. Lie E. C. A Study of the Lymphogranulomata. *E. J. Surg.* 1934 12: 4

The authors report a case of recurrence of lymphogranulomata which had been controlled by irradiation therapy.

Lymphogranuloma was first described in 1871 by Hodgkin. The author reviews the theories as to relation to tuberculous, diphtheric, and streptococcus infections. They are inclined to believe that it is a form of tumor as only in such a theory do they find it possible to explain satisfactorily the profound disturbances in the lymphatic and economy of the lymphogranulomatous individual. They believe that the condition is at first a localized benign process which later shows evidence of progressive development with mitotic forms and plasma cell picture of malignancy with involvement of other glands and tissues. The treatment depends upon the theory regarding the cause.

The authors review the methods of treatment used. They believe that the most successful treatment is irradiation. A ray irradiation is superior to radium irradiation, giving effects which are often dramatic.

M. HENRY BAKER, M.D.

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

**Imperial I Crafts of Fixed Skin An Experimental Contribution to the Question of Rehabilitation (In the field of the Contribution to the question of the rehabilitation of the injured)** 1933 2 903

The author refers in detail to Nageotte's work according to Nageotte who studied especially connective tissue there are two parts to every tissue—an interstitial part and a cellular part. The interstitial part not being living substance maintains its plastic characteristics in transplant whereas the included cells die rapidly when they are removed from their natural environment. This conservation of the connective tissue framework is the process essential to the success of transplants. To prevent disintegration of the supporting framework Nageotte resorted to immediate killing of the tissue by means of fixation. From the results of his experiments he concludes that the transplantation of such tissue is soon followed by destruction and removal of the included cells by the mobile cells of the living transplant bed and that this is followed by filling of the empty connective tissue structure with living fibroblasts is a process constituting a true revascularization of the tissue. A major advantage of the use of the fixed implant or transplant is the possibility of employing heterogeneous tissues.

As in the first series he found the double procedure successful both experimentally and clinically whereas others claim that instead of being rehabilitated the implant are replaced by new living tissue. To determine which of the two opposing groups is correct the author arranged experiments on rabbits in which he grafted skin from heterologous and autologous animals and studied the results grossly and histologically after periods ranging from 1 to 100 days.

All of the findings pointed rather to a process of replacement of the transplant by regenerative changes in the host.

In conclusion he says that in spite of the failure of true rehabilitation the implants are of value as they form a mechanical protective covering stimulate regeneration and impede the formation of hypertrophic and sclerosing scar tissue.

A LOUIS ROSE M.D.

**Whipple A. O. The Use of Silk in the Repair of Clean Wounds. A. S. S. G. 1933 20 672**

The author states that healing by primary union may be defined as the restitution of the incised tissues to their normal condition with minimal scar formation and with no discharge from the line of incision or from stitch holes of an exudate which either clinically or bacteriologically indicates infection.

Controllable factors of importance in primary wound healing are proper sterilization of supplies, solutions, gowns, gloves and instruments, the development of an aseptic sense in the surgical team, careful skin preparation, careful masking of the nose and mouth of every one in the operating room, and limitation to the minimum of injury to the tissues and of the amount of foreign body introduced into the wound. In discussing the last factor Whipple compares the use of silk and catgut clinically and experimentally. In using silk the surgeon must avoid tight sutures, mass ligatures, dissection with blunt scissors, careless hemostasis, the use of any but the finest grades of silk, combinations of silk and catgut, the use of silk in any but a sterile field, and continuous sutures. Since adopting a corrected technique in the use of silk the author has noted a marked improvement in the healing of his clean wounds.

A study of wounds in animals which were sutured with silk and catgut showed that a greater tissue reaction occurred when catgut was employed. The results in these experiments confirmed the findings of Howes, Harvey, and Soo with regard to wound healing and the tensile strength of wounds.

JOHN H. G. M.D. M.D.

**P. M. M. C. The Relation of Postoperative Bronchopulmonary Complications to Anesthesia (Report on the cooperation in postoperative complications of the Department of Anesthesia and the Department of Surgery)** 1933

This is the first of the types of anesthesia—ether, chloroform, nitrous oxide, avertin, spirals, and local anesthetic—forth the advantages and disadvantages of each. He then reviews the lung complications following operations performed at the Hospital of St. Ann in Florence in the



## INTERNATIONAL ABSTRACT OF SURGERY

period from April 1929 to April 1932. Eight hundred and thirty two of the operations were laparotomies.

Of the total number of operations 1262 were performed under general anesthesia and 1062 under local anesthesia induced with tutocain. Bronchopulmonary complications had an incidence of 5.49 per cent and a mortality of 0.77 per cent. In the cases in which general anesthesia was used the morbidity was 3.80 per cent and the mortality 0.39 per cent whereas in those in which the operation was performed under local anesthesia the morbidity was 7.53 per cent and the mortality 1.23 per cent. Pelliccia believes that these figures are true indices of the relative tendency of general and local anesthesia to cause bronchopulmonary complications as local anesthesia was used in the more serious cases and those in which pathological changes were already present in the respiratory tract. He is of the opinion that the anesthesia was rarely the only or even the chief cause of the lung complications.

AUDREY GOSS MORGAN, M.D.

### ANTISEPTIC SURGERY TREATMENT OF WOUNDS AND INFECTIONS

Vészáros K. The Pathology of Injuries Caused by the Electrical Current (Pathologie der Verletzungen durch den elektrischen Strom). Orvos k. p. 1933. xviii, 34.

The constantly growing interest in injuries caused by the electric current is justified not only by practical considerations but also by the fact that the biological and physiological problems connected with these injuries force research into entirely new fields. The explanation of the mechanism of production of the injuries must be based on the morphological variations which are found as the direct result of the action of the current on the living or dead body. In the cadaver the immediate cause of death can frequently be determined. However in many cases the morphological lesion does not correspond completely with the pathological findings. These are the cases which force research into the realm of functionalism.

It is important to determine the changes which arise as a specific effect of the electric current on the skin, the vascular and nervous systems, the bones and the sensory organs which are not comparable to the changes produced in the organism by other causes.

Research on the biological action of electricity moves in two directions: (1) studies of the electrical phenomena taking place within the organism itself and (2) studies of the action of the electrical energy which strikes the organism.

In the realm of electropathology we are dealing with injuries produced by a great increase of a physiological stimulus. However phenomena showing any comparability or regularity in a qualitative quantitative or localizing sense are lacking. In no realm of pathology does the independent individual

alism of the human subject come into the foreground so definitely as in the field of electropathology.

The results of theoretical and experimental research to date may be summarized by the statement that the organism itself constitutes an electrical system which (1) creates electricity, (2) stores electricity, (3) conducts electricity well and (4) gives rise to potential differences.

With regard to the degree to which external electricity affects the independent electrical system of the organism, experiments have shown only that from the standpoint of conduction the organism is to be regarded as a heterogeneous electrical solution. With respect to the pathophysiological action of the current it has been impossible to determine a fixed regularity. The various kinds of animal life respond differently to the action of electrical currents. Most sensitive are fish, white mice and horses. Less sensitive are flies, crabs, birds, the pig, the dog and cattle. Man shows great tolerance to the current. In man an important role is played by the psychomotor forces which can work against the effect of the current up to a certain degree by proper regulation of respiration, blood pressure and muscular innervation.

Experience shows that by properly preparing the attention contact with the current may take place without danger. In accidents, however, contact with the current is usually unexpected. Obviously, therefore, attention has only a very relative protective power.

The action of the current is determined by the tension and intensity of the current and the direction of its action, but the variations in the effects resulting from variations in these factors are not characteristic. In fatal accidents the tension is not intensity and time of action of the current vary considerably.

Under the conditions of emergency practice the signs of the action of an electrical current such as excitability and paralytic phenomena, loss of consciousness, changes in the heart action, hemorrhages and functional disturbances of the intestines, liver and kidneys occur in variable intensity and combinations. The fate of the injured person is determined less by the physical factors than by his condition and constitutional make-up. In the cases of persons with a labile nervous system it is possible for the psychic shock occurring at the moment of death without the production of any demonstrable morphological lesions. In other cases it is possible under favorable circumstances for the functional disturbances caused by the shock to disappear completely.

The explanation of the gross tissue changes is difficult. In a large percentage of the fatal accident cases seen in emergency practice autopsies yield no explanation of the mechanism of action of the current. The histological changes appearing in the muscle tissue are characteristic. No changes can be seen

on macroscopic examination but in microscopic sections the muscle fibers show screw like spirals close together which are especially distinct when the Heidenheim stain is used. Their nature and significance have not yet been determined. The changes in the bone system are quite remarkable. The bones show tears similar to those found in the fiber of trees struck by lightning. The distribution of the tears and fissures may be quite independent of the point of entrance of the current. Their form and extent show no relationship to the local static or muscle mechanism. Among the frequent sequelae of the action of electricity are fragmentation of the cardiac muscle, gross fissures in the liver which often may be seen macroscopically, layer like divisions in the stomach, and dissociation and torsion of the epithelium of the renal tubules. The acute degeneration of the nerve ganglia resulting from the current action can be demonstrated also experimentally. This explains the frequent paralyses and trophic disturbances observed in emergency practice. The changes produced by the electric current in the skin are characteristic. At the point of entrance and exit of the current there develop hard raised pale lesions with a retracted center and a sharp margin. The epithelium covering these areas remains unchanged. The eye is especially sensitive to electricity. While objective and subjective symptoms are often entirely absent immediately after the injury, disturbances of vision may appear weeks and months later as the result of a beginning lensular opacity or cataract formation.

The described pathological changes give important indications with regard to treatment. A large proportion of the cases with absolute respiratory and cardiac paralysis may still be reversible. Properly carried out artificial respiration, lumbar puncture and the administration of proper medication may lead to complete recovery. Attempts at resuscitation must be continued for hours. With regard to necrosis resulting from the action of an electrical current the utmost conservatism is indicated.

F. MAYER, CH. HILFS (Zi)

Dimitza A. and Gutcler H. The Bacteriology of Acid Nital Wounds. *Arch. Surg.* 1933, 93: 1-6.

The authors refer to the earlier bacteriological studies of accidental wounds made by Rygenbach, Brunner, Ritter, Kraft, Gerlach, Dimitza and Cutscher and Vass and report their own findings in 424 cases in which wound material was examined according to Fienrich's method as examined.

Ninety-two (21.7 per cent) of the wounds studied by the authors were free from bacteria. In spite of wound excision and disinfection with 5 per cent tincture of iodine primary union occurred in only 260 of the primarily sutured wounds. In 332 contaminated wounds the following bacteria were found: staphylococci alone in 108 cases and mixed with streptococci and colon bacilli in 50 streptococci

alone in 31 cases and mixed with staphylococci and colon bacilli in 62. Colon bacilli alone in 10 cases and mixed with staphylococci and streptococci in 21 and Fraenkel Welch bacilli in 57 cases. Wounds infected with staphylococci showed a greater tendency to unite primarily than others, but the type of wound was all of importance in the occurrence of primary union. Primary union occurred in 6 per cent of the cases of pure staphylococcal infection and in 50 per cent of those of pure colon bacillus contamination. It was noted particularly that colon bacteria produced suppuration. The high incidence of Fraenkel Welch infection indicates that the possibility of gas gangrene must always be reckoned with particularly in cases of injury due to railroad accidents, all of which showed infection of this type. It is interesting however that gas gangrene did not develop in all cases in which Fraenkel Welch bacilli were found. Of the 57 cases of infection with such bacteria, clinical symptoms occurred in only 15 per cent.

A definite result from the prophylactic use of gas bacillus serum could not be demonstrated. During the last nine months—the study covered a period of four years—the prophylactic serum was not used unless clinical symptoms developed. However such wounds must be kept under careful clinical and bacteriological observation for from thirty-six to forty-eight hours. At the first indications of infection, intervention can still be undertaken.

The authors discuss the various types of injuries and refer to their earlier experience with bite wounds which tend toward sepsis and should never be sutured primarily. Streptococcus sepsis occurred in 3 of 35 cases of bite wounds. *Fr. 12 (Z)*

Saner F. D. Some Considerations on the Treatment of Acute Suppuration. *Lancet* 1933, 67.

In recent years rest in its widest sense has been accepted as the essential basis of the treatment of acute inflammatory and suppurative conditions. In cases of open infected fractures the wound can be left to care for itself to a great extent after the establishment of drainage if the limb is efficiently immobilized.

Rest and warmth should be employed when the signs of inflammation first become manifest or alter an injury, however slight, which is a potential site of infection. The author believes that too much faith is placed in the application of drainage to minor wounds. He recommends instead of iodine thorough cleansing and rest for forty-eight hours.

In order to liberate pus from superficial abscesses an incision should be made at the extreme whole length of the abscess cavity. As a general rule incisions should not be made until pus has definitely formed. An exception is an acute inflammatory process spreading under cover of dense tissue. On no account should an area of inflammation on the face, in the nose or on the lip, however small, be incised in a presuppurative stage.

# INTERNATIONAL ABSTRACT OF SURGERY

Bollini V Roentgenological Determination of the Dimensions of the Heart in 300 Young Adult Males (La d te m naz one h logica d lle d m nel cuore in 300 m h enten ) R d J 1933

Gould E P Irradiation Therapy in the Treatment of Malignant Disease B J J 1933 L

Bollini presents a study of the size and shape of the hearts of 300 healthy men about twenty years old. Of the various methods for determining the size of the heart in the living he prefers the radiocardiographic method described by Palmieri in 1919. He discusses the value of orthodiagraphy and the possible sources of error in this and other methods. The results of his study are evaluated by the statistical method of Viola. The relationship between the size of the heart in various projections and the size of the body is shown by curves and tables.

EC ENT L EDA MD

Philips G W The Effect of Radiation on Blood La J 1933 C x 74

In a brief review of the literature the author points out that there is little agreement regarding the changes that occur in the blood cells following irradiation. The most frequent effect described is a leucopenia associated with a relative and absolute lymphopenia but by some reticulocytosis monocytosis or anemia has been reported. In the study reported by Phillips erythrocyte leucocyte and differential counts were made on alternate days in the cases of nine patients with malignant disease who were undergoing X-ray or radium therapy. The contrast is very striking in the period of from twenty to thirty days are presented graphically. The total dosage given in each case was as follows:

Case	Radium Mgms	Dose	Leucocytes	Platelets
1	80,000 (2 gm)	1,200	4,000 (1 gm)	100,000 (2 gm)
2	42,000 (1 gm)	1,200	2,300 (1 gm)	100,000 (2 gm)
3	49,000 (1 gm)	1,200	4,000 (1 gm)	100,000 (2 gm)
4	48,000 (1 gm)	1,200	3,900 (1 gm)	100,000 (2 gm)
5	39,000 (1 gm)	1,200	3,900 (1 gm)	100,000 (2 gm)
6	39,000 (1 gm)	1,200	3,900 (1 gm)	100,000 (2 gm)
7	39,000 (1 gm)	1,200	3,900 (1 gm)	100,000 (2 gm)
8	39,000 (1 gm)	1,200	3,900 (1 gm)	100,000 (2 gm)
9	39,000 (1 gm)	1,200	3,900 (1 gm)	100,000 (2 gm)

In no case was an anemia produced by these doses. The white blood cell count was not materially altered in any case and leucopenia did not occur. In the case of malignancy the lymphocyte count tended to be lower but the irradiation had no effect on the results suggest that the changes in the blood picture are produced in the blood picture by large doses of irradiation and that the blood count per se should not limit the amount of irradiation administered. H and L MD

In the thirty odd years since radium and X-rays were first used in the treatment of malignancy the value of irradiation has been gradually increasing under recognition. The method has come to stay although its true place in the treatment of cancer is still to be determined. This type of treatment came upon the scene at a time when standard major surgical procedures were being attacked by the radiation therapist being therefore denied the opportunity to treat the early cases. The technique of radium therapy changed and developed so rapidly that no sooner were the results of a particular method followed up sufficiently than they lost their significance because the technique had become out of date. As to the cure of cancer it is probable that some other disease is cured until he is dead or avoided in the discussion. Palliative treatment or lasting freedom from the disease are more suitable phrases. The author discusses the following questions with regard to radiotherapy:

1. What group of lesions yield best to irradiation and surgery?
2. What groups are merely palliated by radiation methods?
3. In what groups is irradiation of no value?
4. Since irradiation is still in the stage of development any answers to these questions can be found in a critical study of the data of roentgenologists and radium therapists. Critical studies of a comparison of the results with surgical lines the author reports the results of follow-up investigations at the Middlesex Hospital London in all cases of malignant disease not treated with radium or the X-rays in order that the methods compared with the statistics of cases treated with radium which are collected year by year. These statistics represent the surgical skill of all members of the staff and include the good the poor and the indifferent.

Of 1,000 cases of malignant disease only 45 were considered suitable for radical surgical treatment. Of these all but 4 have been traced. Of 131 patients treated surgically for cancer of the breast 2 died from the operation 45.3 per cent were alive and free from the disease at the end of three years and 31 per cent were alive and free from the disease at the end of five years. Of 4 treated for cancer of the end of the year and 2 (5 per cent) were free from the disease at the end of five years. Of 103 with glandular element 41 (39 per cent) were free from the disease at the end of three years and

33 (22 per cent) were free from the disease at the end of five years.

Of 13 patients with carcinoma of the tongue 5 died of the operation 11 were free from the disease at the end of three years and 10 at the end of five years.

Of 14 patients with carcinoma of the floor of the mouth and mucosa of the lower jaw 3 died of the operation and 5 were free from the disease at the end of from three years to five years.

Of 10 patients with carcinoma of the lip 9 were free from the disease at the end of three years and 5 at the end of five years.

The author discusses also cases of carcinoma of the parotid gland stomach colon rectum and skin.

In conclusion, the author states that in the field in which radium therapy yields definite results—lesions of the skin, mouth and breast—surgery also gives encouraging results and in the fields in which radium therapy accomplishes little—lesions of the stomach, colon and rectum—the results of surgery are disappointing. Radium and the X-ray are nothing more than focal remedies. The advantages they offer are freedom from the risk of life and avoidance of invalidism, mutilation and pain but in these days of healing surgery such advantages are less convincing. However, radium and the X-ray are unquestionably of value as palliative agents in advanced cases, especially those of lesions for which surgery is of little value in the more hopeful stages.

(J. W. M. R. A. M. D.)

#### Chane O. Radiation Treatment of Malignant Disease R. I. U. J. 931 67

This article is limited to radium therapy. The author states that radium is not a substitute for either the X-ray or surgery. The principles underlying each method are reviewed. When all of the methods are used by experts there is little difference in their end results.

All conceptions of radium therapy are based on the important fact that gamma rays act on the dividing cell and not on the resting cell. It is safe to assume that actively mitotic tissue will be sterilized and so which will affect relatively stable tissue to a much less extent. The more primitive the tissue the shorter its life. Thus, it borne out the fact that in rodent ulcer and relatively simple epithelioma the effect is more active whereas in glioma carcinoma which is made up of complex cells it is only so low. The fact that the effect of radium depends upon the rate of cell division explains why a rodent ulcer is more amenable to radium treatment than a glioma carcinoma. Radium can sterilize or partly sterilize tumor cells with the rate of cell production. It is not a test of the virulence of the tumor but a local effect and inflammation results. Hence a cure of the tongue with superficial radium therapy is the best radium irradiation.

The radio sensitivity of the surrounding structures limits the scope of radium treatment. The liver is an example of tissue susceptible to the gamma rays. The patient's general condition is also of importance. In the cases of cachectic patients and patients showing signs of general carcinoma, irradiation is contra-indicated.

All parts of the growth must be given an adequate dose of gamma rays and at the same time permanent injury to surrounding healthy tissue must be avoided. Such treatment is relatively simple in accessible areas such as the skin, cervix, mouth and breast.

The method by which radium may be used are enumerated. They include the application of radium against the surface of the growth, the introduction of needles into or around the tumor, teletherapy or the placing of a large amount of radium at various distances up to several centimeters from the body, a procedure which imitates X-ray treatment and a method called cavitation, the placing of radium in a natural body cavity as in the treatment of cancer of the cervix.

The implantation method which concerns the surgeon most was originated in Dublin by Joly and Stevenson who were the first to introduce emanation in a metal needle. This was one of the great advances in the treatment of cancer. The interstitial irradiation used today is carried out as well by the surgeon as by the irradiation therapist. Further experience will render implantation just as exact a method as teletherapy and X-ray irradiation. The radiotherapist will develop an excellent technique of implantation even if he does not possess special surgical knowledge. In addition he will know how to apply deep X-ray therapy or other methods when implantation should not be used. Therefore the conclusion may be drawn that radium therapy will be best developed if left in the hands of trained specialists. The result of treatment depends less on the technique than on the intelligence with which the radium is employed.

In conclusion the author states that there is need for special radiotherapeutic clinics in which radiologists may study and follow up their cases. Statistics and follow-up examinations are of great importance.

(J. W. M. R. A. M. D.)

#### Leitch W. M. Radiation Treatment of Malignant Disease R. I. U. J. 931 67

The purpose of this article is to discuss the questions as to when and in what form irradiation may be applied in the treatment of malignant disease. The methods of application are (1) internal method, (2) short-distance surface application, (3) intracavitary application and (4) long distance surface application called teletherapy, therapy or bomb therapy. When X-rays are mentioned by the author the high voltage heat filtered rays are meant. It is agreed that the best results can be obtained only by the use of the filtered irradiation.

Levitt is concerned chiefly with the relative value of the various methods used in the treatment of cancer. It is assumed to be essential to give an adequate dose of irradiation throughout the extent of the malignant growth. The proportion of malignant tumors that can be adequately treated by interstitial methods is limited chiefly by anatomical factors which interfere with access to the growth for insertion of the radium. In the use of short distance radiotherapy the requisite dose can be obtained only to the depth of a few centimeters. Therefore this form of treatment must be limited to comparatively superficial lesions. Similarly, intracavitary methods are limited almost entirely to carcinoma of the uterus and growths in the tonsil and esophagus. Theoretically both the radium bomb and the  $\gamma$  rays possess sufficient penetrating power to permit application by crossfire method of almost any desired dose to any region of the body but in practice it is found that when the disease is widespread the application of large doses by this means is impossible. The facts brought out in this part of the article are summarized briefly as follows:

1. The interstitial use of radium is limited to accessible growths but has a very intense local action.

2. Short-distance surface applications are suitable for local action to a limited depth only.

3. Intracavitary methods are limited to the vagina, mouth and throat.

4.  $\gamma$  rays and the radium bomb are capable of producing an intense action in any desired region but heavy dosage is not tolerated in very extensive disease.

In order to determine the suitability of irradiation treatment for a given tumor it is necessary to know (1) the origin and type of the growth, (2) the extent of the growth, and (3) the common directions of spread of the lesion, even though such spread is not clinically evident.

Our knowledge of radiosensitivity still leaves much to be desired. Certain histological varieties of tumor have special characteristics as regards sensitivity but in the determination of the radiosensitivity of the majority of growths histology is of little or no help. Histologically similar breast tumors vary greatly in their sensitivity. The author discusses three groups of tumors with regard to sensitivity: (1) highly radiosensitive tumors, (2) moderately radiosensitive tumors and (3) radio-resistant tumors.

Among the highly sensitive tumors are the small round celled sarcoma and lymphosarcoma, the seminoma, certain carcinosarcoma of the breast and ovary and the medulloblastoma. Among the moderately radiosensitive growths are the round celled sarcoma, the endosteal sarcoma, the chondrosarcoma, most carcinosarcoma of the breast and carcinoma of the prostate, bladder, larynx, cervix, lip and skin. In the group of radioresistant growths are carcinoma of the rectum, esophagus and tongue

and carcinoma of the cervical glands, scrofula and malignancy of the mouth.

It is stated that most radioresistant growths are frequently incurable. While irradiation treatment may result in local success in every case of such tumors, the generalization of the disease places it beyond the aid of radium therapy. Therefore the formation of metastases must be taken into account in the prognosis.

By the term "highly radiosensitive tumor" is meant a tumor which can be made to disappear with doses of irradiation producing little or no damage to normal tissues. Local or remote round-celled sarcoma and lymphosarcoma should always be treated by external irradiation. For this treatment the  $\gamma$  rays are more economical and more convenient than radium. Unsatisfactory end results in lymphosarcoma are due to generalization of the disease rather than to local failure of the treatment. Interstitial methods should never be used in round-celled sarcoma or lymphosarcoma. The seminoma should also be treated by external irradiation. In a large number of cases of malignancy failure to administer sufficiently large doses of  $\gamma$  rays or gamma rays is due to the limitations imposed by the vulnerability of healthy tissues.

For the destruction of moderately radiosensitive tumors a dose of irradiation which approaches fairly closely the maximum tolerance dose of healthy tissues is necessary. Therefore the treatment of such tumors requires care and skill to avoid severe damage to healthy tissues. The best method is the interstitial application of radium as this produces the most intense local effect with minimal exposure of healthy tissues. The regional lymph nodes should also be given adequate interstitial irradiation if possible. If the glandular areas are not accessible,  $\gamma$  ray or surface radium is applicable in the neck, but for deeper regions  $\gamma$  ray irradiation or teletherapy should be employed. If interstitial radium treatment is impossible because the lesion is too extensive,  $\gamma$  ray irradiation often will succeed in reducing the growth sufficiently to permit the embedding of radium. If the possibility of complete irradiation of the lesion by the interstitial method is doubtful, the combined method should be employed. If interstitial methods are entirely impossible, the  $\gamma$  rays should be used.  $\gamma$  ray irradiation frequently yields good results in pharyngeal and palatal growths and in carcinoma of the prostate, cervix, corpus of the uterus and thyroid gland. If complete disappearance of the lesion is brought about by  $\gamma$  ray irradiation, either radium irradiation or surgery should be used in an attempt to make the result more permanent. Moderately radiosensitive lesions of the skin are best treated with the  $\gamma$  rays but surface radium is of value for small growths. When bone or cartilage is involved the chance of success is greatly reduced. For radioresistant growths interstitial irradiation is the method of choice. The whole lesion must be thoroughly barraged. If this cannot be accom-

pushed X-ray irradiation will afford some degree of palliation. As resistant cervical gland metastases present a difficult problem there seems to be a tendency to return to block dissection with pre-operative or postoperative irradiation with the X-rays or radium. A combination of X-ray and radium irradiation should yield results superior to those obtained with either method alone. In a particular group of cases treated by surgery Mrs. X may be the only survivor after five years but if the same series of cases had been treated by radiotherapy the sole survivor might be Mrs. X. Thus by a combination of radiotherapy and surgery it might be possible to save both Mrs. X and Mrs. Y.

In conclusion the author says that we should not be content with using only one means of treatment for even though we can make a breast growth disappear with radium irradiation the breast remains a potential source of danger and should be removed. Moreover when the patient has undergone a major operation intensive irradiation is of great value in preventing a recurrence and we should not allow ourselves to be lulled into a false sense of security by a satisfactory primary result.

A. JAMES LUKIN, M.D.

#### MISCELLANEOUS

Cumberbatch E. P. Modern Methods of Electrical Treatment. *Practice* 1931 6: 1515.

This article was written for the general practitioner to show the value of electrical treatment as practiced today to give reasons for its usefulness and to

indicate the part which the general practitioner can play in electrotherapy.

By the term modern the author means that electrical methods of treatment are now employed with a relative amount of scientific knowledge. Much still remains to be discovered regarding the effects of these methods on pathological conditions and the way the effects are obtained.

In the treatment of disease or injury electricity acts in one of three ways: (1) by heating, (2) by producing chemical changes in the tissues, or (3) by stimulating muscle and nerve. The author enumerates the advantages of the choice of electricity for the production of these effects and cites examples of its application in various pathological conditions in different parts of the body.

Cumberbatch believes that the future of medical electricity depends upon the action and attitude of the general practitioner since he is the first to be consulted by the patient. The progress of electrotherapy requires both medical specialists and non-medical assistants. The general practitioner should know whether or not electrical treatment is advisable and what form of such treatment is indicated. When he lacks the time to administer the treatment or is unable to administer it, certain forms should be referred to the medical specialist but other forms may be administered by a trained non-medical assistant under his direction. Cumberbatch believes that this policy will keep the treatment under the direct control of the medical profession and prevent its exploitation by untrained non-medical persons.

GERTRUDE BERLIN

## MISCELLANEOUS

### CLINICAL ENTITIES--GENERAL PHYSIOLOGICAL CONDITIONS

Newburgh L. H. and Lashmet F. H. The Importance of Dealing Quantitatively with Water in the Study of Disease. *Am J Med Sci* 1933 141: 462

The authors report studies of the water balance in cases of chronic nephritis with and without edema, cerebral hemorrhage and intestinal obstruction. They state that as the elimination of the waste products of normal metabolism requires about 2,200 c.c.m. of urine with a specific gravity of about 1.010, an intake of from 4,000 to 5,000 c.c.m. of water is required in such cases. When dehydration occurs, albumin casts and red cells appear in the urine. The presence of edema renders the administration of water no less necessary.

M. HERBERT BIERER, M.D.

Wilder R. M. The Diagnosis of Parathyroid Dystrophic Function. *J Clin Endocrinol* 1933 3: 1

The diagnosis of parathyroid osteosis is usually comparatively easy if the disease is fully developed but is difficult in the early stages and sometimes even in cases of several years' duration.

In the differential diagnosis of hyperparathyroidism it is necessary to rule out all other diseases in which the bones are involved as well as a variety of visceral conditions.

While knowledge of the serum calcium value is necessary in cases of parathyroid osteosis, the diagnosis cannot be based on this alone as the serum calcium has been found normal in unquestionable parathyroid overfunction and hypercalcaemia is observed in a variety of diseases in which there is no reason to suspect the parathyroid glands. With regard to the serum calcium in arthritis, opinions differ. Hench, Nachlas and others with wide experience have not encountered hypercalcaemia in arthritis. It occurs at times in gout and leukaemia and especially in cases of multiple myeloma and malignant tumors of the skeleton. Moreover, the calcium balance may be negative in extensive destructive processes involving bone such as multiple myeloma, endothelioma and carcinoma of bones and metastatic calcification of the kidneys, stomach and lungs such as has been noted with considerable frequency in hyperparathyroidism. Therefore, none of these abnormalities of metabolism is diagnostic of parathyroid osteosis.

The inorganic phosphorus of the serum is probably more significant from the diagnostic standpoint than the calcium. In hyperparathyroidism the serum phosphorus is usually low whereas in cases of multiple myeloma it is normal or high.

Among the various conditions which must be distinguished from parathyroid osteosis are so-called osteitis cystica, forms of endochondroma, the Schöler-Christian syndrome of xanthomata of the membranous bones, exophthalmos, diabetes insipidus, and multiple myeloma and other malignant tumors of bones. In a number of cases of parathyroid osteosis the diagnosis of sarcoma has been made. Ewing's sarcoma with involvement of multiple bones may occasionally be mistaken for parathyroid osteosis but should be distinguished from it by careful roentgenographic studies. Paget's disease bears only a superficial resemblance, either clinically or even genealogically, to parathyroid osteosis and is associated with no disturbance of the calcium metabolism. Osteomalacia and rickets usually can be diagnosed from the clinical history of deficient nutrition.

None of the conditions mentioned offers such difficult diagnostic problems as hyperparathyroidism before the occurrence of a gross skeletal lesion. In the early stages, when diagnosis would be of most benefit, hyperparathyroidism is associated with such obscure symptoms as aching of the muscles, lassitude, mental and physical fatigue, nervousness, tachycardia, loss of appetite and constipation. Sometimes there is diarrhoea and in rare cases renal colic. Routine determinations of the inorganic phosphates and phosphatase of the blood in all cases presenting this vague syndrome might help in the recognition of some of the early cases, but much laboratory investigation of this large group of patients with such symptoms is not practicable.

Morton J. J. Hyperparathyroidism. *J Clin Endocrinol* 1933 3: 5

Morton reports a case of multiple bone cysts in which removal of the right inferior parathyroid gland was followed by cure. The pathological diagnosis was adenoma.

The clinical picture caused by hyperparathyroidism is characterized by:

1. Weakness and loss of muscular tone
2. Pain and bone tenderness in the extremities and spine
3. Symptoms referable to the urinary system such as polyuria and renal colic due to the formation of renal stones. These occur only occasionally.
4. Gastro-intestinal symptoms such as epigastric pain, anorexia and nausea.
5. The appearance in several bones of areas of rarefaction due to cystic degeneration and demonstrable in roentgenograms.
6. Softening of the skeleton and progressive crippling deformities. These occur in the late stages.

Elevation of the serum calcium from a normal of 10 mgm. to from 12 to 24 mgm., a decrease in the

plasma phosphorus from a normal of 3 mgm. to from 1.5 to 2.8 mgm. an increase in the excretion of calcium especially in the urine up to eight times the normal and a high phosphatase content of the blood. The diagnosis of hyperparathyroidism is confirmed by

1. The finding of parathyroid tumors at post-mortem examination in cases of multiple fibrocystic disease.

2. Improvement in the clinical picture, healing of the cysts and return of the chemical character of the blood to normal following the removal of parathyroid tumors.

3. The production of the disease picture experimentally in animals by repeated doses of parathormone.

The disease continues to progress unless the cause, i.e. the abnormal parathyroid tissue is removed. A collar incision is made as for a thyroid operation and the glands are carefully searched out. Postoperative tetany should be treated by a diet with a high calcium and vitamin content.

There is some difference of opinion as to whether the pathological change is a hyperplasia or a true tumor (adenoma). WILLIAM A. MAX, JR., M.D.

Ceccarelli G. Heterotopic Bone Formation (Sull'eccezione topografica della diartrosi). 1933.

The author reports a case in which bone was formed in a laparotomy scar. The patient was a man forty-eight years of age who had been operated upon for peptic ulcer through a midline xiphoid-umbilical incision. When he was re-examined six months later a portion of the scar consisted of a hard mass about 8 cm. long and averaging 2 cm. in width. Histological study of the excised scar showed it to consist of large and irregular bony trabeculae some of which contained cartilage in the process of ossification.

Since the first similar case was reported by Askanazy in 1900 only about fifty cases of such bone formation have been recorded. The author believes that the condition is more common than is apparent from the literature.

Ceccarelli was led to undertake an investigation of heterotopic bone formation by the case reported in this article and the observation of osseous plaques in experimentally produced hydronephrotic sacs. Bone formation has been noted in practically all organs but the most frequent type is related to trauma (in the rib cage, nose, man's bone). Bone formation in incisional scars is most frequent in males from forty to seventy years of age. It occurs almost always in the xiphoid-umbilical region following operations on the stomach. This region seems especially favorable to its occurrence. The author cites a case in which two incisions were made a xiphoid-umbilical and an inguinal incision but bone formation appeared only in the supra-umbilical scar. The bone formation generally becomes apparent from four to six weeks after operation in the form

of linear plaques or indurations usually from 1 to 2 cm. wide but often as much as 10 cm. long. The new bone is surrounded by connective tissue which fixes it firmly to the surrounding connective tissue and skin.

The formation of bone in laparotomy scars may be related to several factors such as a small unabsorbed hematoma acting as a foreign body, suppuration causing chronic irritation, a specific influence of the blood elements, postoperative cough causing a continued mechanical strain on the healing connective tissue, foreign material introduced as suture and the transportation of peritoneum into the wound when the knife cuts the xiphoid. The frequency of involvement of the linea alba is of interest as possibly the tendinous insertions here representing the abdominal ribs of reptiles may yet possess retained osteogenic nuclei capable of developing under irritating stimulation. This may explain also the absence of infra-umbilical bone formation. Numerous researches on different phases of the problem are reviewed.

The author reports a series of experiments carried out on rabbits to study abnormal bone formation in the kidneys. These were divided into two groups. In some of the first group both the arteries and veins were ligated and in others only the arteries. In the second group ligation of the ureter was done two months before similar vascular ligations. The specimens were studied from two to nine months after the vascular ligations. Bone formation was found in almost all especially in the remains of the medulla in close proximity to and in contact with the pelvis. In the kidneys which were previously hydronephrotic the bone formation was more precocious and farther from the pelvis a difference probably related to the increased amount of calcium present.

The author gives a detailed description of the histological changes in the various stages of the bone formation. Preparation of the specimens by vital staining showed that an important rôle as played by the cells of the reticulo-endothelial system.

Ceccarelli concludes that the cellular elements are the dominant factors. Under the influence of certain stimuli the undifferentiated polyblastic cells are capable of bone production. These cells are of the nature of histiocytes and a form of transitional cell similar to connective tissue osteoblasts and the blood-haemocytoblast. A. LOUIS ROSE, M.D.

Svenningén O. K. Generalized Xanthomatosis. 1933. 49.

The author reports a case of generalized xanthomatosis in a girl four years of age. This condition has been called also xanthomatism and Christy's syndrome, the latter term denoting a triad of symptoms consisting of osseous changes especially in the skull, diabetes insipidus and exophthalmos. In the case reported by the author osseous changes were found in almost every part of the skeleton, there was considerable protrusion of the



## INTERNATIONAL ABSTRACT OF SURGERY

eyeball and the diuresis was about 4000 gm per twenty four hours. The first symptoms were gingivitis looseness of the teeth with pyorrhea and albumin defects in the lower jaw. The Bence Jones injections of pituitrin and a metallosal cure were without effect.

Frimann Dahl J and Forsberg R Roentgen  
1933 XI 506 Treatment of Xanthomatosis

The authors describe the roentgen treatment in a case of xanthomatosis. This treatment was applied to the different loci and had a striking effect. Roentgenograms showed a gradual diminution of the xanthomatous areas and a corresponding regeneration of bone substance.

Parallel with the favorable effect on the local processes there was a striking improvement in the secondary symptoms and the general condition. The symptoms of intracranial pressure disappeared. The growth of the patient increased and the blood cholesterol was reduced to normal. After two years the patient was practically free from symptoms.

McLaughlin C R The Curling Ulcer. A Study  
of Intestinal Ulceration Associated with Supra-  
renal Damage. A. S. S. 1933 XI 490

The Curling ulcer is an ulcer associated with congestion and inflammation of the mucous membrane of the alimentary tract which occurs following superficial burns. Lesions of this type are infrequent in women as in men. They occur most often following burns on the trunk. The severity of the burn is frequently not the determining factor in the development of the ulceration. The cause is still vague. The most common site of the ulceration is the duodenum above the ampulla of Vater. The ulcers usually appear within from two to seventeen days after the burn. The average time is from six to twelve days. The lesions may be long and narrow. They are acute and usually progress rapidly to perforation or healing. They show little tendency to become chronic. They may be single or multiple. The diagnosis is rarely possible during life. Death usually results from hemorrhage or perforation before the nature of the lesion is recognized.

For some time it has been recognized that superficial burns cause suprarenal damage. This is demonstrated by (1) hyperemia of the suprarenal and reduction of the lipids and chromatin substances and results of which depends on the severity of the burn (2) a rise in the blood sugar the height of which depends on the severity of the burn (3) a reduction of the cholesterol content of the suprarenals to 15 per cent of the normal content and (4) the occurrence of suprarenal hemorrhage.

Animal experimentation suggests a relationship between suprarenal damage and gastric and duodenal ulceration. Mann found ulceration of the stomach or duodenum in forty of sixty dogs after bilateral suprarenal resection. Following this opera-

tion there is a rise in the urea nitrogen of the blood to from 40 to 80 mgm per 100 c.c.m. Histamine has been suggested as a possible factor in the production of peptic ulcer.

In experiments on twenty four dogs the authors attempted to produce suprarenal damage similar to that produced by superficial burns. Of the twenty one animals examined at necropsy eighteen were subjected to bilateral and three to unilateral suprarenal damage. The suprarenal cortex was injured chiefly by coagulating current. A high frequency current was produced by a high frequency current between the operations. The animals were killed from one week to one month after completion of the operative procedure. In seventeen of the twenty-one animals definite ulceration was found in the duodenum. In no case was there any evidence of gastric ulceration. On the basis of their appearance the ulcers were classified as acute and chronic. Ten were acute and seven chronic. In the cases of three of the acute ulcers gastric analysis showed no definite variation from the normal. There was no elevation in the urea nitrogen during the postoperative period. These findings suggested that suprarenal insufficiency was not present to any marked degree.

The possibility that suprarenal damage may disturb the normal balance between the sympathetic and parasympathetic nervous system is discussed.

Weeder S D Pilonidal Cyst. A Study of 1795  
Cases. J. THORNTON WINTER, MD

A certain percentage of pilonidal cysts, sinuses, dimples and sacrococcygeal dermoids can be cured by bloc dissection of the soft parts over the dorsum of the sacrum and coccyx. In cases of recurrence in which roentgen examination of a sinus tract injected with a substance opaque to the X rays shows the tract to invade the sacrococcygeal joint the application of methylene blue causes discoloration at the sacrococcygeal joint or the character of the lesion about the sacrococcygeal joint is under suspicion. The remnant of the cyst wall or sinus tract is probably contained within the sacrococcygeal joint as an isolated obliterated portion of the medullary canal and cure requires removal of this remnant by excision of the coccyx.

In the operative technique described by the author the sinus tract was injected with methylene blue by means of a Luer syringe with a goose neck cannula and the mouth of the sinus tract compressed about the cannula track with forceps to prevent leakage. A wide dissection of the tract within the soft parts down to the sacrum and coccyx was then done. The coccyx was excised at the sacrococcygeal joint and the articular surface of the sacrum and sacral hiatus were curetted. The wound was closed by Latex method an incision being made to the side of the bone the interosseous tissue undermined at its attachment to the bone to form a double pedicle.

lap and the lap was closed to the midline and fixed by sutures to the sacrum.

J THOR ALL WITH ESPOO MD

Heaney H G Extra genital Chorionepithelioma in the Male (Am J Cancer 1935 23)

Malignant chorionepithelioma though its name implies a placental origin occurs in males as well as females. With few exceptions chorionepithelioma in males occurs primarily in the testis but there are records of at least two cases in which it seemed to be definitely of urogenital origin. To the latter the author adds another case in which a tumor of chorionepitheliomatous structure arose in the retroperitoneal spaces. The patient was a man forty years of age.

A review of the literature disclosed 131 cases of chorionepithelioma in the male. In more than 90 per cent the tumor arose primarily in the testis. The prognosis is almost invariably grave. Death has occurred within two months. The onset of symptoms but survival for periods longer than two years have also been reported.

Theories concerning the origin of testicular chorionepithelioma are numerous. Often in the original tumors and occasionally in metastatic growths teratogenous elements have been found. This has led some investigators to attempt to explain the genesis of chorionepithelioma by the theories of origin of the teratoma. By the use of the term sarcoma angioplastique the French suggest an endothelial origin. By analogy an epithelial genesis is assumed. The incidence of chorionepithelioma in the testis in the years of permatogenic activity has given rise to the theory that the tumor has its origin in totipotential cells. By many the hypothesis of misplaced blastomeres with subsequent malignant degeneration is accepted. Heaney believes that in his case the tumor was due to the urogenital anlage.

The sudden onset of symptoms which became increasingly more severe, the rapid loss of weight, the unlocalized pain and the loss of vitality corresponded to the clinical history in such cases. The diagnosis was based on the finding of a hemorrhagic necrotic mass in the retroperitoneal area and a similar pulmonary metastasis in which histological examination revealed syncytial cell masses and polyhedral cells representative of the Langhans type in the normal placenta. JOSEPH K. NARAT MD

Raposo I G Study of Cancer Immunity (Cancer 1935 30: 933-935)

The author reviews 167 spontaneous cancers of the mammary gland occurring in female mice. At the time he found cancer of the breast in 3.6 per cent of 133 mice. The majority of the tumors were in the left mammary. Forty-two occurred in animals between 18 months of age and 5 years of age. The greatest number of new findings in animals over 18 months of age. These cancers formed in the mammary gland or liver.

Thirty-four of the tumors were simple alveolar carcinomata. 5 were cystic alveolar carcinomata. 1 was a cystic papilliferous carcinoma. 62 were medullary carcinomata. 2 were scirrhous carcinomata. 14 were alveolar adenocarcinomata. 31 were medullary adenocarcinomata. 11 were cystic adenocarcinomata. 2 were papilliferous cystic adenocarcinomata. 1 was a simple cystocarcinoma and 1 was a papilliferous cystocarcinoma.

When a cancer graft takes it is the transplanted cells that proliferate. The cells of the host animal do not contribute at all to the increased size of the tumor. The relative biological independence of the graft within the body of the host is decisive proof that cancer is not contagious.

Some of the mice showed several cancer nodules. One hundred and twelve showed only 1 nodule. 7 had 2 tumors. 16 had 3 and 14 had 4. However, the author believes that these were not primary multiple carcinomata of the breast but metastases from a single primary cancer.

Some of the tumors could be grafted but others did not take under ordinary experimental conditions. Of the 169 tumors 36 could be grafted and 133 did not take. With this material and material from the Imperial Cancer Research Fund and Jensen rat sarcoma the author studied the most important problems in the technique of grafting tumors such as the dose to be injected, the age of the host animals, the intervals between inoculations and the differences in homologous and heterologous grafts. He did not succeed in making intracerebral grafts of a number of tumors in different animals. The best site for inoculation was the axillary subcutaneous tissue.

He studied also the changes in the structure of the tumors and in the percentage of grafts that took in the course of a series of transplantations carried out over a period of several years. In some instances a relationship between the percentage of grafts that took and the structure of the tumor was apparent. Raposo confirmed the findings of Bashir and his collaborators with regard to successive fluctuations in the vitality of the cancer cells between a maximum and a minimum. This is in agreement also with clinical facts.

In the third part of the article the author takes up the question of natural resistance to grafts and the immunity acquired by grafted animals. He believes that resistance and susceptibility depend on local conditions of nutrition of the grafts. He found that if sclerosis is brought about in a zone in which a tumor is to be grafted it prevents the graft from taking. The addition of blood plasma or serum to the grafted material makes the cells survive longer. Mice with a pH higher than 8 or lower than 7 also inhibit the growth of the grafts. He criticizes the classical theory of a specific reaction of the strain and also the more modern theory of a lymphatic reaction. He believes that the lymphatic reaction is of less importance than it has been assumed to be and that blockade of the reticulo-endothelial system is not of any special importance.

With reference to acquired immunity he agrees with Russell that grafts of sarcoma tumors produce a condition of immunity of varying duration while those of other tumors do not produce such an immunity. Autolysates and extracts of the tumors studied by him did not bring about immunity. He was unable to confirm Lumsden's conclusions with regard to the humoral mechanism of cancer immunity.

The article is followed by a bibliography of 24 pages.

AUDREY GOSS MORRIS, M.D.

TAVARES, A. The Influence of the Nervous System in Experimental Cancer (Subidiopatia experimental) *ig d p i l* 93 1 56

Several investigators have carried on experimental research in an endeavor to determine the effect of the nervous system on the growth of cancer, but the results have been contradictory. Some of the experiments have indicated that the sympathetic nervous system is a primary factor in the production of cancer as sympathectomy seemed to activate the production of sarcoma tumors of the ear and suppression of peripheral cerebrospinal innervation had an unfavorable effect on the growth of these tumors. Other investigators reported opposite results. This discrepancy in experimental results was found also in the few clinical cases in which attempts were made to treat spontaneous tumors in man by neurectomy.

In an effort to solve the problem the author performed experiments on rabbits. Tumors of the ears were produced by the use of tar heated to 56 degrees. In some of the experiments sympathectomy or neurectomy of the nerves of the ears or both operations were performed before the tar cancers were produced. In others the cancers were produced

first and the nerve operations performed afterwards. In the cases of unilateral resection of the nerves the other ear served as a control.

The following conclusions were reached as a result of the experiments:

1. Preliminary sympathectomy has had a slight effect on the appearance and development of tumors in the rabbit. If it has any effect it is unfavorable rather than favorable to the growth of the tumors.

When practiced after the tumors have developed sympathectomy seems to interfere with the development of the tumors and tend to bring about retrogression and cure even when the tumors are of a malignant type. It must not be forgotten, however, that spontaneous regression sometimes takes place in these artificial tumors even if the tarsing is kept up. Not a single case of aggravation of the lesions was seen after sympathetic neurectomy.

3. This action of sympathetic neurectomy may be due to changes brought about by it in the nutritive condition of the tissues. It causes an intense fibrous connective tissue reaction which is a defense reaction against the proliferation of the tumor cells.

4. Suppression of cerebrospinal innervation seemed in some cases to have a distinctly favorable effect on the development of sarcoma tumors, while in other cases it had no perceptible effect.

These results are not in agreement with those of other investigators. The author says that this disagreement and the discrepancies in his own results in a given group of experiments prove the importance of a combination of all local and general factors of individual receptivity in experimental cancer. He believes that predisposing general factors are of more importance than the local conditions produced by nerve resection.

AUDREY GOSS MORRIS, M.D.

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NOTE—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THE ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

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# INTERNATIONAL ABSTRACT OF SURGERY

MARCH 1934

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

Kettling W. Tumor of the Jaw With a Consideration of the Cases Treated at the Anschar Hospital at Kiel During the Years from 1908 to 1919 (Tumor mandibular unter Beruecksichtigung der in der Jahre 1908 bis 1919 am A. Ch. Kr. Krankenhaus Kiel behandelten Faellen) 933 Kiel Dert 10

Besides the tumors found also in other parts of the skeleton there occur in the jaws peculiarly local odontogenic tumors. The author classifies the latter as follows: (1) cysts (a) radicular (b) follicular (2) adamantinomatous (3) odontomata and (4) congenital odontoblastomata.

In general tumors develop more frequently in the maxilla than in the mandible and jaw tumors are more common in females than in males.

The radicular dental cysts develop in fully formed teeth from granulomata. They show internally an epithelial lining and contain a clear yellowish fluid. In cases with infection they contain pus cells, epithelial cells and cholesterol platelets. In the cancellous bone of the maxilla these cysts find a greater possibility of extension than in the mandible.

The follicular cysts are traceable to disturbances of the development of the tooth germ. According to Huegler the Malassez epithelial ridge serves as the matrix. The interior of the cysts is lined with squamous or cylindrical epithelium.

The adamantinomatous which appear in solid and cystic forms are traceable to a proliferation of superfluous tooth germs or paradental residue of the enamel epithelium. Although the cysts do not metastasize local recurrences appear if they are not removed completely. Clinically they are benign.

The odontomata do not represent a uniform type of tumor. They consist of dental tissue elements and may develop from one or more embryonic rudiments. Occasionally a fully developed tooth is found hidden under an odontoma. The most harmless are the odontomata attached to the roots the so-called enamel drops.

The congenital odontoblastomata (congenital epulides) are extremely rare. They appear as tumors about the size of hazelnuts which are attached to the jaw by a broad base. They are clinically benign.

Of the tumors of the jaw not arising from the dental system the malignant tumors are the most common. All forms of sarcoma (myelogenous periosteal undifferentiated round cell spindle cell and many others) are represented. The relationship of the so-called giant cell sarcoma to osteitis fibrosa is disputed.

To the immature tumors of the connective tissue series belong in addition to the sarcomata the epulides which have their origin in the periosteum of the alveoli especially the peridontium. Certain extrinsic factors (inflammation chronic mechanical irritation) and endocrine disturbances of the organism (pregnancy) are believed to be responsible for their development. They occur about twice as often in women as in men. It is necessary to differentiate between epulis fibromatosa and epulis sarcomatosa. According to Konjetzny the latter should be considered not a true tumor formation but a localized osteitis fibrosa. A third form of epulis, the so-called epulis carcinomatosa which in contrast to the other types forms metastases. In this type of epulis resection of the affected jaw should be done whereas in the fibromatous and sarcomatous types a thorough scraping of the diseased tissue under local anesthesia usually gives good results.

In contrast to the sarcomata carcinoma of the jaw occurs more frequently in males than in females. It is most common in the fifth and sixth decades of life. The true primary carcinomata originating from the mucous membrane of the jaw (carcinomata of the mucosa of the alveolar process the antrum and carcinomata from the residua of the dental anlage) must be differentiated from secondary carcinomata of the mucous membrane of the mouth lips salivary glands and tongue which may extend to the jaw. Frequently these carcinomata develop on the basis of leukoplakia. On histological examination the

tumor is found to be a carcinoma simplex or a squamous-celled or cylindrical-celled epithelial cancer. A hope of cure is offered only by early intervention with radical removal of the diseased tissue. Postoperative recurrences are exceedingly frequent. In inoperable cases of extensive carcinoma with lymph gland and hematogenous metastases the only treatment to be considered is irradiation. The results from irradiation alone are extremely poor. On the other hand after surgical removal of a carcinoma energetic irradiation is advisable to decrease the danger of recurrence.

On the basis of six cases of carcinoma and one case of sarcoma of the mandible the author discusses the principles of the surgical treatment of these tumors. According to the extent of the growth partial resection or total extirpation of the diseased bone or under certain conditions even exarticulation is necessary. Essential for a good cosmetic result is prosthetic after treatment. An important advance in modern surgery is the use of an implantation prosthesis which is introduced into the wound immediately and left to heal in. The removed bone is best replaced by a free bone transplant. Pain is usually relieved by anesthetizing with novocain the trigeminal branches at the base of the skull according to the method of Braun or the gasserian ganglion according to the method of Haertel. The bleeding from the bone (inferior alveolar artery) is best controlled by compression with wax or by the use of the thermocautery. To prevent aspiration of blood a prophylactic tracheotomy is sometimes necessary. The peroral intubation of Ryba and the use of intra tracheal insufflation anesthesia induced by the Meltzer Auer method are also of value.

In conclusion the author says that satisfactory results in the treatment of tumors of the jaw require close and intelligent cooperation between the surgeon and dentist. EICHENWALD (Z)

## THE

Beigelman M N Actinomycosis of the Orbit  
*Arch Ophth* 1935 x 664

The author reports a case of actinomycosis of the orbit which came to autopsy and reviews seventeen cases of this condition which he collected from the literature.

His own case was that of a forty five year-old man who had a painless tumor in the parotid region. Following its excision the neoplasm was diagnosed as a granuloma of undetermined etiology. The wound continued to suppurate for months and the process extended into the orbit causing proptosis and optic neuritis and into the brain causing a low grade meningitis. The patient died about thirty months after he first noticed the tumor.

Cultures made from smears from an abscess in the temporal lobe of the brain showed the characteristic mycelia. The author believes that the infection may have entered the orbit and brain through the sphenoidal fissure.

Whether or not large doses of potassium iodide would have changed the picture is problematical as the danger of the condition lies in the extension into the cranial cavity. The meningitis may cause few or no clinical signs or symptoms.

THOMAS D ALLEN M.D.

Vall D T Jr Mixed (Teratoid) Tumors of the Lachrymal Caruncle  
*Arch Ophth* 1935 x 57

A review of the literature on tumors of the caruncle suggests a classification of such tumors, a report a case.

The case was that of a man twenty four years old who had had a growth in the inner canthus for many years. The tumor had had a single large hair in it for seven years and three weeks before the patient was seen by Vall it suddenly began to grow rapidly. The neoplasm was a firm sessile glistening reddish tumor with rounded edges which measured 10 by 8 by 4.5 cm. The microscopic section contained fibrous and adipose tissue smooth muscle, a sebaceous gland hair follicles a large cyst, numerous small cysts many blood vessels and lakes of blood. No evidence of malignancy was observed, and three years after the operation the patient remained free from recurrence. THOMAS D ALLEN M.D.

Kronfeld P C Function of the Re attached Retina  
*Arch Ophth* 1935 x 646

Little has been published concerning the function of the re attached retina. An anatomical reattachment without return of function is a gain but the possibility of the return of vision will always be the chief inducement for a patient to submit to operation.

The author reports in detail six cases in which careful perimetric and central field studies were made. These were cases of partial sector shaped retinal detachments of more than one month's duration which were successfully operated upon by the Gonn Lindner or Weve diathermy methods. The degree of isopter was normal outside of its limitation at the immediate area of operation. The 0.1 degree isopter for white was constricted in each case the degree of radial constriction apparently depending strictly on the duration of the detachment and perhaps on the age of the patient. The dark field paralleled the isopter for 0.1 degrees closely except that in one case of very long duration it remained nil or the entire re attached area. The longitudinal extent of the constriction for white colored and light targets in the dark room paralleled the extent of the detachment. No signs of remote permanent poisonous effects were observed following uncomplicated operations by the Gonn Lindner Lindner Gunt or Weve diathermy method.

In cases of partial or complete macular detachments of less than two months duration and cases of partial macular detachments of more than two months duration the prognosis for the restoration of function is favorable.

WILLIAM A. MANN JR. M.D.

## NOSES AND SINUSES

Leroux L. and Delarue J. Contribution to the Histological and Anatomoclinical Study of Nasal Polyps (Contribution à l'étude histologique et anatomoclinique des polypes du nez) *Ann. otol. rhinol. laryng.* 1933 42: 50

Various histological types of nasal polyps are described. In the most common type the covering epithelium is normal but the chorionic elements show proliferation and are dissociated by edematous fluid. In some cases the inflammatory phenomena are minimal as in pseudomyxoma. In others they are marked and the epithelium undergoes changes which may result even in total necrosis and bone involvement. In a third group the inflammatory signs are superficial and the deeper portion of the polyp consists of a granular tissue rich in newly formed blood vessel. This is the telangiectatic inflammatory granulation which when epidermized forms the histological substratum of a true polyp. It is the type found in cases of numerous multiple polyps of the sinuses and septum.

In a slightly different variety of polyp the fibrous proliferation assumes important proportions, sclerosis is the predominant histological feature and the epithelium is nearly always in a state of malpighian metaplasia.

Among the inflammatory polyps there are those in which the plasmocytes seem to predominate giving the appearance of pseudo tumor (plasmocytomatous) and in the opinion of some furnishing proof of a specific origin of the inflammation. Russell bodies may be found in the plasma cells and free.

Of greater interest in the authors opinion are the polyps in which eosinophile cells predominate being found not only in the periaascular inflammatory nodules but also distributed throughout the entire section and especially at the surface in the subepithelial zone among the epithelial cells themselves.

In some cases the term polyp tumor might be more descriptive. Sometimes the polyp appears to be invaded by numerous glandular acini in a state of proliferation so violent as to seem in itself pathological. The general shape of the polyp in such cases is that of an adenoma. The chorion may be fibrous or edematous and is often in a state of more or less active inflammatory reaction.

One type of polyp the pseudo angiomatous type presents numerousascular cavities. In others the inflammatory symptoms have subsided and only a dense sclerosis remains about the newly formed vessels. There are also polyps resembling in appearance a capillary angioma with numerous blood cavities but no inflammatory phenomena whatever.

It is clear that nasal polyps do not constitute a constant definite histological entity but all of the aspects may be considered different phases of the inflammatory process from polypoid pseudo myxoma to bothriomyxoma from telangiectatic granulation to edematous polyp and from slight glandular hyperplasia to the adenomatous polyp.

However the pathogenic processes for each type differ. Thus in the granular polyps polyps with acute inflammation polyps rich in fibrous tissue and inflammatory cells and polypoid plasmocytomatous there is usually a lesion of focal infection with or without bone involvement whereas in polyps in which the chief feature seems to be an edematous infiltration of the chorion there are evidences of a veritable hyperergic inflammation. In the latter type a vasomotor disturbance is the factor responsible. Recurrent polyposis may be interpreted as a manifestation of the exudative diathesis. The eosinophile polyps are situated at the asthmatic diathesis. The authors believe it most difficult to prove a neoplastic origin of polyps especially as so many cases of pseudo angioma and pseudo adenoma show an inflammatory basis.

EDITH SCHWABER MOORE

Stewart J. P. Progressive Lethal Granulomatous Ulceration of the Nose *J. Laryngol. & Otol.* 1933 53: 657

The author reports ten cases of progressive lethal granulomatous ulceration of the nose. The pathological basis of this condition is unknown. From the clinical and microscopic appearance Stewart concludes that the lesion is not a tumor but essentially a pyogenic condition a chronic inflammatory process. The clinical picture is that of progressive destruction of the nose, face and pharynx. It is characterized by a prolonged hectic fever and frequent severe hemorrhages. The most marked feature is the patient's complete lack of resistance to the infection. The condition differs from agranulocytosis in the fact that the leucocytes range from 2,000 to 14,800 but the proportions of the cells are normal.

In all of the cases reported the condition was successfully differentiated from syphilis, tuberculosis, malignancy, agranulocytosis, mycosis, myiasis, yaws or frambesia, rhinocleroma, leishmaniasis, rhinopharyngitis mutilans (gangos) and trophic post-encephalitic ulceration.

Bacteriological studies in seven cases showed a streptococcus in combination with a staphylococcus.

Local applications proved useless. Arsenic had no effect on the progress of the disease. Radium was employed in two cases with indefinite results. Deep radiotherapy seemed more promising and in the author's opinion should be given a further trial.

JAMES C. BRASWELL, M.D.

## MOUTH

Grossmann F. The Results of Radium Therapy of Cancer of the Tongue on the Basis of the Material of the Government Roentgen Institute in Leningrad (Die Ergebnisse der Radiumtherapie des Zungenkreises am Material des Städt. Roentgeninstituts in Leningrad) *Zeitschr. f. Krebsk.* 1933 85

Radium therapy may be employed in a greater number of cases of cancer of the tongue than radi-

cal surgical treatment as even inoperable cases frequently respond to it. However, grossly neglected cases with large metastases in the glands metastases in the lungs or cachexia should not be treated by irradiation as in such cases this treatment tends to accelerate the course of the disease.

The author material in Judes senty two cases in which radon implants were used and the glandular metastases were removed surgically or irradiated with the roentgen rays or radium or both. The period of observation ranged from a few months to five years. Twenty-four (33 per cent) of the patients were cured, eighteen (23 per cent) showed marked improvement, eleven (15 per cent) showed some improvement, seventeen (21 per cent) showed no change and two died. Of the twenty-eight patients who were treated more than three years ago, 25 per cent were definitely cured. To prevent a severe reaction the condition of the mouth should be improved as much as possible (carious teeth) before the treatment is begun. Large doses of irradiation are not indicated. The thickness of the wall of the platinum needle should not be less than 0.5 mm.

Treatment of the glandular metastases is very difficult. In the first stage of metastasis when the glands are not yet palpable treatment is unnecessary. However, if the patient cannot be kept under constant observation irradiation with radium is advisable. When in the second stage the glands have become palpable but are still mobile they should be removed surgically and the operation followed by irradiation with radium. Even when the metastases have invaded the floor of the mouth their surgical removal is advisable as it will improve the effect of radium therapy. In the third stage in which large immobile glands are found operation is useless or even harmful and it is better to irradiate externally from the beginning. In all such cases the author first removes the glands then inserts radon needles into the lingual tumor and then completes the treatment by external irradiation. Because of the poor result of surgical treatment he believes that ultimately radium therapy will be used in all cases of cancer of the tongue.

LUDWIG HOLST (Z)

### PHARYNX

Raven R. W. Pouches of the Pharynx and Esophagus with Special Reference to the Embryological and Morphological Aspects. *B. J. S. R.* 1933 233 235

Acquired posterior pharyngeal diverticula result from increased intrapharyngeal pressure causing prolapse of the mucous membrane. Contributory factors are loss of elasticity of the muscles composing the lower pharyngeal constrictors and persistence of contraction of the pharyngeal portion of the cricopharyngeus muscle during deglutition.

Acquired anterior pharyngeal pouches are very rare.

Congenital pouches of the esophagus are found associated with an esophago-tracheal fistula and changes in the rate of growth; the cells which normally separate the trachea and esophagus. They result also from imperfect separation of those structures and from defects in the muscular coats. 4 times they are associated with multiple diverticula of the colon.

Pouches in the posterior wall are rare. They may have their origin in a cyst which acquired a lining into the esophagus. Acquired pouches may arise from an adhesion with tuberculosis, lymphogranuloma, the region of the bifurcation of the trachea. Pouches are associated also with obstruction in the lower third of the esophagus between the fibers of the cricopharyngeus muscle or in the lower third. Occasionally they seem to have their origin in an ulcer.

In animals, natural pharyngeal pouches are not common. Pathological pharyngeal pouches are rare and pathological esophageal pouches are common.

GEORGE R. M. ARISTO M.D.

Linck A. The Paratonsillar Abscess and the Abscess Tonsillectomy—Winkler's Operation (Die paratonsilläre Abszesse und die Abszess-Tonsillektomie—Winklersche Operation). *Zentralblatt für Chirurgie* 1933 233 235

Formerly paratonsillar abscesses were treated as a rule by simple incision. The use of tonsillectomy (Winkler-Levinger) at first found few advocates. However, when it was learned that paratonsillar abscess is only one manifestation of a disease complex due to an intratonsillar cause, opinion changed. Among others, Hofer, Mathé and Linck favored tonsillectomy. To delay this operation until the incised abscess has healed is without justification as even ruptured abscesses following tonsillectomy and sinus suppuration are operated upon radically in 1 stage.

The operation of abscess tonsillectomy is simple and requires little time. The anesthetic procedure (conduction and local anesthesia) is easier to learn and carry out than is generally assumed. Abscess tonsillectomy is of advantage because it removes the entire disease; it discloses any small hidden abscesses that may be present; the wound conditions are simple; increasing danger of inflammation and hemorrhage is eliminated; and the operation can be performed without delay for ripening of the abscess. The incision treatment is disadvantageous because of technical difficulties in discovering the abscess and keeping the wound open, the necessity for repeated incisions, and the facts that incision is possible only when the abscess is distinct and large and is only a partial treatment which as a rule must be followed by a secondary tonsillectomy. The danger in addition to the general operative dangers which are supposed to be associated with primary tonsillectomy are postoperative exacerbation and sinus. However, personal experience has shown that there is danger only in an unsuitable operation, namely, squeezing of the soft parts and improvement.

induced local anaesthesia. The opening up of the lymph channels in phlegmonous tissue is not to be feared as the disease focus is removed radically and no unfavorable conditions of drainage are left behind. This is not true of incisions.

The author found his view correct in over 200 cases treated in his clinic. The results in these cases were very good. Although there was progress of the condition in an occasional case, this was due not to the operation but to the neglect of the suppuration which had already occurred at the time of the operation. Therefore the operation should be done early. The objection that it is especially painful (Tonndorff); not valid. Moreover repeated incisions and a secondary tonsillectomy in cicatricial tissue are much more painful. According to experience the possibility of primary or secondary hemorrhage is very slight and when hemorrhage occurs it can be controlled much more easily in the clean wound conditions of tonsillectomy than in those associated with incision. After incision tamponade particularly appears to be dangerous and also painful. According to our present knowledge it is evident that we must remove not only an abscess but also the simultaneously existing cause of the disease. Incision will always be a partial treatment as it leaves behind a focus which may produce recurrences. The demand for a secondary tonsillectomy arose from the gradual increase of knowledge of the disease picture as a whole. As the primary radical operation has now been proved more advantageous and harmless, the 2 stage procedure is no longer indicated. The author cannot substantiate the reports on the benign course of peritonsillitis (Elaesser). The statistics are limited to the simple favorable cases. The abscess should be regarded only as a stage in the course of the disease. As a rule the recurrences are not considered. Even when an abscess runs a favorable course after incision there always remains the question: What will come next? As no one can answer this question treatment by primary abscess tonsillectomy is greatly to be preferred.

E. Weiss (Z)

## NECK

Frankenberg B. Operative Therapy of Extensive Cicatricial Contractures of the Neck (Operative treatment of cicatricial contractures of the neck). *Arch. Chir.* 1933; 540.

The author's method of operating for the relief of cicatricial contractures of the neck is based on the anatomophysiological peculiarities of the neck and the elasticity of the skin of the neck region. As is well known the elasticity of the skin of the neck is greatest in a direction vertical to the furrows of Langer's lines. As cicatricial tissue extends only as far as the panniculus adiposus, the planning of an operation must include two chief objects: mobility of the neck and elasticity of its skin. Accordingly a plastic operation on the neck requires

1. Removal of the cicatricial tissues and plastic replacement of these tissues with normal skin in the upper part of the neck, above the cricoid cartilage. Below this level use may be made of the cicatricial tissues.

2. A scar line which will be transverse in the upper half of the cervical region, vertical or even oblique toward the midline, spreading fan-like from the two mastoid processes and converging toward the jugulum sterni in the lower half.

For healing of the chief wound surface any preferred method may be used. The plastic operation should not be undertaken earlier than six months after the burn. An exact plan of operation must be worked out beforehand. The skin of the neck and of the adjoining regions which is to be used for the plastic substitution should be carefully tested as to its elasticity by means of palpation. The sense of form should be as highly developed in the plastic surgeon as in the sculptor.

In the technique used by the author the cicatricial area is first dissected loose, the dissection being begun at the topmost part in the neck. Care is taken to leave the flap attached below by a wide pedicle. By this procedure complete mobility of the head and neck is attained. The next step consists in covering the lower half of the neck, partly by means of skin drawn over from neighboring regions and fixed by strong silk sutures and partly by means of the cicatricially altered flaps which have been loosened from above. The upper half of the denuded surface is covered by means of pedicled flaps taken from healthy skin areas. Later a few minor procedures may be employed to complete the plastic operation.

The author has performed this operation in ten cases with good cosmetic and functional results. Three of the cases are reported in detail. The article contains twenty-one sketches and photographs.

G. Litrov (Z)

Anderson A. B., Harrington C. R. and Murray Lyon D. The Use of 3,5-Diiodothyronine in the Treatment of Myxedema. *Lancet* 1933; ccx, 65.

The substance 3,5-diiodothyronine is readily prepared in a state of purity by a synthetic method and is stable. It is easily standardized and does not undergo deterioration when stored. In six cases of high grade myxedema in which it was administered in doses of from 50 to 75 mgm. daily it was found capable of relieving the symptoms. The metabolic rate was restored to the normal level and maintained at that level without the production of toxic symptoms. As a rule there was a considerable loss of weight and the pulse rate increased from the sixties into the seventies. The electrocardiograms were very similar to those produced by the daily administration of 1 mgm. of thyroxine. The authors express the hope that 3,5-diiodothyronine will prove a valuable substitute for thyroxine.

M. Heber (Baker) M.D.



Weller C V Hepatic Pathology in Exophthalmic Goiter 1 11 31 2 1935 21 543

The author refers to several reports by others on the occurrence of jaundice in conjunction with hyperthyroidism. In most of the cases the jaundice was attributed directly to the thyroid intoxication and occurred as a terminal condition after long duration of the hyperthyroidism.

In studies of hepatic function in exophthalmic goiter carried out by the author and others impairment of liver function was demonstrated definitely. While as a rule there was no apparent relationship between the degree of functional impairment of the liver and the basal metabolic rate, the known duration of the disease or the percentage of weight lost in individual cases the function of the liver cell seemed to improve as the basal metabolic rate returned to normal.

The author reviews the evidence of others which indicated a change in liver function in animals to which thyroid substance or thyroxin had been administered.

The structural changes in the liver which have been found at autopsy in clinical cases of hyperthyroidism and in experimental investigations showed fatty degeneration and necrosis with relatively more fibrosis and lymphocytic infiltration than bile-duct proliferation. Because of the patchy character of these lesions Weller describes the condition as a patchy chronic parenchymatous interlobular hepatitis.

Since chronic hepatitis particularly of a mild type is occasionally found in the absence of a known cause in patients who have not had Graves disease it became necessary in the author's investigation to establish a further control of the selected material. This was done by determining the incidence of chronic hepatitis in patients of the same sex and approximately the same age who had been free from conditions known to produce pathological changes in the liver and also free from Graves disease. The findings in the two series of cases were as follows:

	Graves Disease	Control Cases
No chronic hepatitis	0	33
Slight chronic hepatitis	16	4
Well marked chronic hepatitis	6	1
Total	48	43

The difference in the occurrence of hepatitis in the two series seems to indicate that the occurrence of chronic interlobular hepatitis of the type described in association with Graves disease has a definite significance.

NORMAN C BELLOCK M.D.

Jung A The Surgery of the Parathyroids II Hyperparathyroidism and Its Surgical Treatment (La chirurgie des parathyroïdes II L'hyperparathyroïdisme et son traitement chirurgical) J de Ch 1933 211 529

The symptom of hyperparathyroidism are (1) hypercalcaemia (2) an increased content of

calcium in the urine (3) hypophosphaturia (4) a decrease in the serum phosphorus (5) decalcification of the bones (6) muscular hypotonia and (7) neuromuscular hypo-excitability. Hyperparathyroidism with typical chemical changes in the blood bile and urine skeletal changes a thena digestive disturbances and increased coagulability of the blood may be produced experimentally by the injection of a potent parathyroid extract. The author discusses the effect of removal of parathyroid adenomata removal of apparently normal parathyroid glands and resection of the arteries in cases showing evidence of hyperparathyroidism. All three have a beneficial effect on the symptoms.

The following clinical syndromes are associated with hyperparathyroidism:

1 The osteitis fibrocystica of von Recklinghausen. The author has obtained statistics on sixty cases seen in the period from 1925 to 1933.

2 Severe polyarthritis and chronic rheumatism. In the majority of eighty six cases operation yielded good results.

3 Paget's disease

4 Scleroderma

5 Osteomalacia

6 Less clearly defined conditions such as Basedow's disease keloids disturbances of callus formation and obliterating endarteritis.

In some of these conditions parathyroid resection or ligation of the arteries has proved of value.

The author gives a detailed description of the technique of parathyroidectomy and arterial resection.

MICHAEL W. POOL M.D.

Heaf F R G The Prognosis of Tuberculous Laryngitis B J J 1933 2 960

Laryngeal tuberculosis is always secondary to pulmonary tuberculosis. Improvement of the pulmonary process usually followed by improvement of the laryngeal lesion. However an increase of the pulmonary process does not necessarily mean that there will be an increase of the process in the larynx.

The chief factors influencing the prognosis in laryngeal tuberculosis are (1) the type of lesion (2) the patient's resistance and (3) the patient's habits and temperament.

Laryngeal lesions are of the following 4 types: (1) extrinsic (2) intrinsic (3) localized and (4) lipoed. Those of each type may be subdivided into the ulcerative and the non-ulcerative.

Of the first type of laryngeal lesions are the arytenoid-epiglottic cases with massive infiltration oedema of the epiglottis and pyramidal swelling of the arytenoid. The prognosis of these cases is very unfavorable. Up to the age of thirty years it is hopeless. After the age of forty years the response to treatment is moderate but not permanent. The lesion is almost always ulcerative.

Of the second type are cases with infiltration of the vocal cords and interarytenoid region. The prognosis in these cases is better. If the infiltration extends to the arytenoids or the ventricular fold

the possibility of recovery is reduced by about 50 per cent. A symptom of importance in the prognosis is dysphagia.

Of the third type are a number of cases not conforming to either of the first two types. In these the lesion is confined to one side of the larynx or there may be two small areas, one on either side. A case is placed in this group regardless of the location of the lesion if half of the larynx is clear. Most of the patients do well, particularly if no ulceration is present and the lesion is firm.

Of the fourth or lupoid type of laryngeal lesions are the cases of granular, papillary and smooth tuberculomata. These lesions rarely cause symptoms. They respond favorably to treatment and have little influence on the general prognosis.

The most frequent order of involvement is the arytenoid, the interarytenoid fold, the vocal cords, the ventricular bands and the epiglottis. The prognosis is most favorable when the site of onset is the vocal cord and next most favorable when the site of onset is the interarytenoid region. Localized lesions, even when large, have a good prognosis if they are firm and fibrotic. Edema, ulceration and necrosis with dysphagia make the prognosis grave. Solitary lesions on the vocal cords have a good prognosis in contrast to those on the ventricular bands. Infiltration of any part of the soft palate or fauces is always fatal.

Resistance is determined by the patient's history, the onset, the family history and the type of the

pulmonary lesion in addition to the condition of the blood. The latter is considered to be of the greatest importance. The combination of a rapid sedimentation rate, a high monocyte count, a low lymphocyte count and a low eosinophile count which shows no tendency to change under general sanitation régime means poor resistance. As long as this blood picture persists the laryngeal lesion will not improve. The type of pulmonary lesion gives some indication of the patient's reaction to infection. The more fibrotic the pulmonary lesion, the less the likelihood that the laryngeal lesion is severe. An acute exudative pulmonary lesion is often associated with an acute oedematous laryngeal lesion which rapidly ulcerates. Fibrotic pulmonary lesions are accompanied by benign, slowly progressive laryngeal lesions which respond rapidly to treatment. Since the incidence of fibrotic lesions is high in patients over the age of forty years, tuberculous laryngitis at that age is most commonly of the benign type.

Habits and temperament influence the prognosis because they often determine the extent of the patient's co-operation in the treatment of the condition. In cases with concurrent disease such as diabetes and syphilis the prognosis should be guarded. Pulmonary lesions leading to fibrosis render the prognosis more favorable. Pregnancy has a serious effect in the early months of laryngeal involvement.

The article contains tables based on a study of 110 cases of laryngeal tuberculosis.

ARTHUR S. W. TOLOFF, M.D.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

Wright, L. T., Greene, J. J., and Smith, D. H.  
The Diagnosis and Treatment of Fractured Skulls. *J. Ch. Surg.* 1933 XVII, 88.

The authors discuss cranial injuries on the basis of an analysis of 34 cases treated on a traumatic service during a period of one and a half years. They are inclined to favor the recent tendency to treat such injuries largely with rest, maintenance of nutrition, and sedative drugs. They do not approve of the use of hypertonic dextrose solution, dehydration, or drainage of the cerebral ventricles.

Leo M. D. Meyer, M.D.

Lenormant, L., Wertheimer, P., and Patel, J.  
Immediate Treatment of Fractures of the Base of the Skull (Traitement immédiat des fractures de la base du crâne). *J. de Ch.* 1933 XII, 5.

The authors first discuss the various sources of fracture of the base of the skull—bony lesions, lesions involving the meninges and brain, and reactions of vasomotor or organic. The cerebral vessels are considered to have vasomotor control and to react to traumatism in the same way as other vessels of the body react to cerebral trauma.

In experiments on dogs simulated with a cannula the authors studied the effects of extra-cranial, sub-arachnoid, and intra-cerebral injections and the mechanism of blocking of the flow of cerebrospinal fluid.

The following therapeutic measures are considered:

1. Treatment of meningo-cerebral lesion. (a) extra-cranial and sub-arachnoid extravasations, (b) intra-cerebral hemorrhage and contusions.

2. Treatment of intracranial hypertension. (a) trephination with irrigation, aspiration, and catheter, (b) ventricular and lumbar puncture (c) the use of hypertonic solutions.

3. Treatment of hypotension of the cerebrospinal fluid by the injection of distilled water or normal serum.

The treatment is discussed with relation to two periods—thirty to twenty-four hours and the next two or three days.

The physical reactions to be watched for are (1) changes in the pulse, (2) respiratory difficulty, (3) elevation of the temperature, (4) hypotension or hypertension of the cerebrospinal fluid (as determined with a manometer), (5) changes in arterial pressure, and (6) ocular changes. In the diagnosis of blockage of the spinal fluid the Queckenstedt's test procedure is of aid. Max W. Fowler, M.D.

Owen, J. Th.  
The Sequelae of Head Injuries and Their Treatment (Les suites et leur traitement des lésions du crâne). *J. de Ch.* 1933 XII, 103.

The author discusses the sequelae of head injuries and corresponding severe functional disturbances, and reviews from a practical, etiological, and diagnostic standpoint. It must be directed to the injury of the vessels, nerves, and cerebrospinal fluid system in addition to the direct injury of the brain itself. Our knowledge of the pathophysiology and physiology of the nervous system, and animal experiments in this branch of study have produced a satisfactory picture. Therefore an exact knowledge of the details of the injury and the first symptoms is of the greatest importance. The author suggests a list of questions to aid the clinician who is faced with a head injury.

A certain early lumbar puncture which at the same time is of therapeutic value, should be done. Examination of the cerebrospinal fluid from all standpoints is very important. Post-mortems of the skull should be made as early as possible. On previous classification of brain trauma—concussion, compression, and contusion—too much emphasis is not placed on the conditions. Neither does the duration of the initial period of unconsciousness based on the classification of concussion of the brain and brain and diffuse contusion of the brain, offer any basis for prognosis. Sometimes a most severe brain injury remains without sequelae. On the other hand it frequently happens that a patient with an injury of the head who is discharged from surgical care after a comparatively short period of treatment returns to the hospital at the end of a few weeks with severe symptoms.

If we disregard such gross disturbances as meningitis and abscess, there still remain a series of which a whole are determined by the term "traumatic encephalopathy." According to Forster they may be subdivided into vasomotor, meningo-pathic, and encephalopathic, but in the author's opinion this classification is associated with the danger of emphasizing too strongly the organic character of the injury and disregarding the functional disturbances. If definite focal symptoms are present, the diagnosis does not present any great difficulty. The author has drawn attention to the less obvious picture of depression, a syndrome of course to the occipital region or the cerebellum he mentions disturbances of equilibrium, hypotonia, and disturbances of co-ordination, direction, and posture. Injury to the corpus callosum is manifested by a syndrome consisting of bilateral disturbance of vision, a positive Romberg test, a ten-

ency to swerve to one side when walking and defective hearing. Disturbances of an endocrine nature should be watched for in every case of brain injury. In injuries to the floor of the third ventricle they may occur without injury to the hypophysis. Closely related to them are the stryate and pallidus parkinsonian phenomena. Fully developed traumatic epilepsy is well known on the whole. However there remain cases which are difficult to diagnose. Otological study of the vestibular apparatus is very important but sometimes fails to be of help. In injuries of the frontal lobe changes of personality are the most prominent symptom. As a rule these injuries cause not a generalized change in the intellectual sphere but single defects.

The author considers the development of true complex psychoses from head injuries to be at least doubtful and at any rate very rare. In contrast organic brain injuries are followed by a large number of functional disturbances. Persons with such injuries frequently suffer from headaches, dizziness, nausea, flushing, sweating and over sensitivity to the stooping posture, exertion, excitement, alcohol and nicotine. The diagnosis is difficult. Today an encephalography gives additional information in some of these cases. However the interpretation of the encephalogram is still very often incorrect. A careful general examination of the patient is indispensable in order to rule out brain disease from other causes (arteriosclerosis, lues). The blood picture and the determination of the rate of sedimentation of the blood corpuscles are of the greatest importance for the diagnosis of brain abscess.

In conclusion Quensel touches briefly upon the therapy stating that in late sequelae of brain injuries treatment is extremely restricted. He warns against too frequent punctures and too long continued injections of hypertonic solutions. For the relief of chronic increased intracranial pressure due to meningitis serosa, pseudotumor and hydrocephalus internus he prefers fenestration of the membrana atlanto occipitalis. Depressed bones which produce symptoms of pressure should be removed early. In discussing the operative treatment of epilepsy Quensel refers to the extensive monograph of Krause. He says that for most cases the neurological conservative symptomatic methods of treatment are still to be considered.

W. MASDEL (Z.)

Blum E. Expert Opinion on Injuries of the Brain and Skull (Zu Beg. tachtung on Hirn und Schädelt.) *Arch. med. Helv.* 1933, 8: 740.

The insured patient and the patient seeking damages often finds himself on examination on the defensive toward the physician. This state of affairs is to be deplored as it is responsible for the law neuroses (Weiszacker). The author is of the opinion that the patient should regard the expert as an aid to him and the physician should endeavor to influence the condition therapeutically through the act of giving an expert opinion. The chief questions

put to the expert in cases of injury of the brain and skull are: 1. Do you believe that the complaints and symptoms are organogenic or psychogenic? 2. What is the degree of working ability?

The author calls attention to the confusion in the literature with regard to the concept of neurosis. In cases of brain injury the ability to work is particularly difficult to estimate. If possible it should be given in percentages. The determination of the ratio of organic psychogenic components in the condition is also especially difficult in injuries of the brain. As every practitioner must make this decision in his consultations it must be attempted in cases of brain injury as well as other lesions. Expert opinion is a psychological as well as a neurological diagnostic procedure. It must be based on the patient's personality as a whole before and after the injury. Of great importance are the psychic condition at the time of the accident and the mental state referable to the trauma. In the organic sequelae and residual disturbances of brain injuries the neurological investigations for diagnosis and differential diagnosis are less difficult than the interpretation of the psychic symptoms.

The organopsychic symptoms may be classified as follows: (1) disturbances of the personality as a whole, (2) emotional disturbances, (3) disturbances of individual psychic functions and (4) disturbances of the sympathetic nervous system. For the first and second groups belong diminution of general functional efficiency, loss of the psychic tempo, changes in character and emotional instability. In the third group are disturbances of perception such as slowing up of conception and loss of the power of mental concentration. In the fourth group belongs the vasomotor neurosthenic syndrome in addition to which there is also a non-traumatic vasomotor neurosis (sympathetic neurosis).

The differential diagnosis must be based chiefly on the history. A valuable addition to the psychological methods of examination will be found in the Rorschach interpretation of form test in the examination of the patient with cerebral trauma if an association experiment is to be included.

In the next part of the article the author reports some of the cases in which he was asked for an expert opinion.

He first cites nine cases of fracture of the convexity of the skull in which healing had occurred by the end of four months but the symptoms persisted for over a year. Three patients had neurotic symptoms. The author states that in cases of skull fracture in contrast to cases of concussion of the brain conclusions as to the severity of the general condition may not be drawn from the duration or occurrence of loss of consciousness. In all cases with a long course bed rest was not continued for a sufficiently long period of time.

Of ten patients with fracture of the base of the skull three showed signs of organic dementia after nine or two years. Encephalitis occurred in five and continuation of the brain in one. Of two patients with

a neurosis one showed aggravation of the condition. Only one patient was without prolonged symptoms. Six cases of compression of the brain presented most varying pictures. In two cases there were symptoms of contusion and in four these were combined with a diffuse encephalosis. Half of the cases were complicated by neurotic manifestations. There was one case of compression with the subsequent development of a neurosis. Of thirteen cases of contusion of the brain four presented cerebellar manifestations, three symptoms of involvement of the frontal lobe and six symptoms of involvement of the cerebral cortex. There were two cases of mild jacksonian epilepsy, a case of contusion of the cerebellum and twenty-two cases of concussion of the brain. For the later judgment of cases of concussion and its sequelae the report of the physician first seeing the patient is of great importance. The factors involved in the loss of consciousness are still undetermined.

According to the author's material the patients were restored to health after from three to six months. Of the twenty-two cases of accident a neurosis was observed in eleven. With one exception (in which case the condition persisted for three years) the patients could be discharged relatively soon. The demands for compensation were refused. In cases of compensation neurosis a single compensation is the best solution. In some cases refusal is necessary.

The author recognizes in neurosis an easily recognized course of disease which is manifested by reactions like other disease processes. In some cases the neurosis may be called a compensation neurosis without affecting the patient to social stigma. In the management and judgment of these conditions the attitude of the physician toward the patient is most decisive.

In conclusion the author states that as a rule patients with cerebral trauma are not kept in bed long enough. SCHWEIZER (2)

Ersner M S and Myers D. An Aid to the Interpretation of Intracranial Complications Resulting from Venous Circulatory Disturbance of the Temporal Bone Offered by X Ray of the Lateral Sinus and Jugular Foramen. *Laryngoscope* 1933 xliii 500

It is well known that venous circulatory disturbances of otitic origin produce intracranial pressure changes. It has been observed also that meningeal symptoms will be manifested under these conditions. The latter depend on the severity of the infection, the type of the temporal and mastoid bone and the state of the venous circulation.

X ray examination of the mastoid process alone is not sufficient in these cases. A complete study of the temporal bone including the mastoid process, the petrous, the vascular structures and the jugular foramina should be made.

Three per cent of skulls show an extremely small jugular foramen on one side. The lateral sinus of the

same side is always smaller and may be completely absent. In 89 per cent of skulls the right lateral sinus is larger than the left. In some however the left lateral sinus is larger than the right.

The ratio of involvement of the right lateral sinus to involvement of the left lateral sinus is 3:2.

The lateral sinus may be completely absent. This has been demonstrated by pre-operative X ray examination.

The presence of a large emissary vein may indicate absence of the lateral sinus, a small lateral sinus or a thrombus obstructing the lateral sinus.

Anomalies of the sinuses and jugular foramen are common. When the circulation is adequate in the presence of such anomalies there are no symptoms, but when the circulation is disturbed symptoms develop. Changes in venous pressure influence intracranial pressure directly increasing or decreasing it. Vasostasis due to disease of the temporal bone with inadequacy of the venous structures will produce increased intracranial pressure and secondary meningeal symptoms.

A careful correlation of the X ray findings with the clinical and operative findings is of great help in the prognosis and treatment of otitic complications. A stormy course may be expected when there is a demonstrable difference in the size of the lateral sinuses and when the larger side is involved. When the infection occurs on the smaller side the prognosis is more favorable as resolution is more apt to occur.

In sinus thrombosis papillitis is present in from 10 to 25 per cent of the cases. If papillitis is absent the circulation may be considered adequate. Inadequacy of the venous circulation with a papillitis and a choked disk indicates increased intracranial pressure requiring immediate measures for its reduction.

The author suggests that the Gradenigo syndrome may be explained in part by a venous disturbance.

SARRADON M D

Sarradon P. A Physiological and Pathological Study of Spasm of the Sylvian Vessels (Les spasmes vasculaires du Sylvien). *Etud. physiol. et pathol. qu.* Thèse de Marseille. Abt. by Olm. *Pes. méd. P.* 933 16

From his histological researches Sarradon concludes that the innervation of the pial vessels can be well demonstrated, but that the intracranial vascular nerves cannot be so well impregnated by the methods available.

Following a review of the physiology of the cerebral circulation he discusses the physiopathology of spasms of the sylvian vessels. With regard to the latter there are two theories. According to one theory the contractions are caused by the muscle fiber of the vessel walls, whereas according to the other they depend upon the vasomotor innervation.

In the clinical part of his thesis Sarradon considers the symptomatic forms of sylvian vascular spasm which are manifested by motor, sensory and speech defects.

HELEHAY M D

DeMartel T. Guillaume J. and Panet Raymond  
J. Ventriculography Technique Results and  
Indications (La e triculographie tchnique  
resultats et indications) *P. sement Par* 1933 21: 834

The authors describe in detail the technique of ventriculography used by them. With the patient in the prone position the head supported on an outrigger as for a suboccipital craniotomy, they make trephine holes 2 cm. to either side of the midline and 3 cm. above the external occipital protuberance. After cannulation of the ventricles the patient is reversed with the head held against the cerebellar head rest by supportive slings so that the occiput and cannulae are beneath. By this means the replacement of the fluid by air is aided by gravity. The pressure is carefully measured by means of an aneroid manometer which is connected at all times to the syringe.

The characteristic ventriculograms obtained in cases of tumor in the temporoparietal region, frontal region, occipital region, temporal region, sphenoidal region, sellar region and posterior fossa are next discussed.

The authors consider ventriculography not only an aid in the establishment of the diagnosis of clinically unlocalizable or latent neoplasms, but also a precision aid in the determination of the size and location of clinically localizable lesions. In 300 ventriculographs there were 4 deaths. The authors believe that neurologists are more and more frequently considering ventriculography as an indispensable complement to clinical examination.

HALL HAYES, M.D.

Rogers L. Associated Facial and Intracranial Hemangiomas *B. I. J. S.* 1931 2: 29

The author reports a case of extensive extradural and intradural communicating plexiform anastomosing anastomoses occurring on the same side as a very large capillary naevus of the face and forehead. The patient was a boy of eight years who had been subject to convulsive seizures for seven years. The fits were characterized by loss of consciousness lasting two or three minutes and followed by paralysis of the left side which sometimes persisted for three days.

Röntgenograms of the skull showed an area of calcification in the right frontoparietal region. Because of the attacks of convulsions followed by transitory hemiplegia and the presence of the facial naevus a tentative diagnosis of partly calcified hematoma was made.

The formation of a right frontoparietal bone flap disclosed an almond sized extradural plexiform angioma. When the dura was reflected and all communicating vessels were clipped the frontal lobe as found to be covered with fine anastomosing vessels. The lesion was apparently a serpentine arterial angioma instead of the more common venous variety associated with facial naevus.

Two fits occurred after the operation but they were not so severe as those which occurred previ-

ously. About two months after the first operation the right internal carotid artery was tied for further interruption of the blood flow through the lesion. Definite improvement followed the patient becoming able to return to school and lead a normal life. Since the second operation he has had several fits but they were mild and not followed by hemiplegia.

ROBERT ZOLLINGER, M.D.

Hausman L. and Stevenson L. Astrocytoma of the Cerebellum. Survival Period of Forty Five Years Without Operation. *Arch. N. & S.* 1933 2: 1100

The most striking clinical features of the case reported by the authors were (1) the duration of survival without surgical intervention, (2) the acute onset, (3) the paucity of neurological signs despite their presence at the beginning, (4) the long period of relief from symptoms, and (5) the attacks of collapse in the terminal stages which were probably due to medullary compression.

The slow advance of the symptoms interrupted by long intervals during which the patient was comparatively free from symptoms is typical of astrocytoma of the cerebellum.

The fact that the patient was not operated upon raises the question whether he would have done as well or better if surgical intervention had been attempted.

NORMAN C. BULLOCK, M.D.

Odasso A. and Volante F. Pachymeningitis Interna Hemorrhagica of Traumatic Origin (Sull p chime inite interna emorraica di ori ne traumatica) *A. Ch. I. L. d. Ch.* 1933 XXIV 676

The authors report in detail a case of pachymeningitis interna hemorrhagica with a large hematoma of the dura mater in a boy sixteen years of age who sustained an injury of the head. The injury was apparently a simple concussion as there was only temporary loss of consciousness and recovery seemed complete. Several months later mild headaches began. One day while in the country the boy jumped across a ditch. When he landed on the other side he stood erect for a few moments and then fell to the ground unconscious. Thereafter his condition became progressively worse with deepening coma, incontinence of urine and feces and periods of quiet and stupor alternating with periods of excitement and incoördinate movements of the extremities. There was no paralysis, evidence of external injury to the head or roentgenographic evidence of fracture. Spinal puncture yielded a normal clear spinal fluid.

Autopsy disclosed a large hematoma in the left dura pressing upon the brain. The hemorrhage seemed to be within the dura itself. Histological examination was made of the dura in many different representative portions. The changes were almost exclusively in the inner layer of the dura especially in the capillary layer of Jones where there was considerable hemorrhage with moderate edema and evidences of fibrosis. There were no apparent signs

of vascular or toxic inflammation. The external layer of the dura, the leptomeninges and the cerebrum were essentially unchanged.

The differentiation of this relatively infrequent condition due to trauma from the spontaneous variety is not easy. The history of a definite trauma is important. From the histological point of view, the traumatic variety has a tendency to heal with fibrous changes, whereas the spontaneous variety tends to be progressive.

The pathogenesis of the condition is probably determined by rupture of the superior pial veins where they open into the sagittal sinus followed by organization of the extravasated blood and abundant connective tissue proliferation. The newly formed vessels of the capillary layer of Jores may themselves be the cause of successive hemorrhages which often prolong or aggravate the condition until death results. The authors believe that the original hemorrhage occurs not on the inner surface of the dura but within the substance of the dura causing disorganization of the intrinsic structure of the dura.

The ordinarily serious prognosis may be modified only by timely surgical intervention. Because of the frequently widespread distribution of the hemorrhages which at times may be bilateral, multiple exploratory trephine opening have been suggested. However, if the hematoma is well localized, a large bone flap exploration is best. A. LOUIS ROS, MD.

**Beinstein S. A.** The Relation of Endothelioma of the Dura to the Skull Bones from the Surgical Standpoint (Ueber die Beziehung des Dura-endothelioma zum Schädelknochen vom chirurgischen Standpunkt). *Arch. f. kl. Ch.* 1933 clxx 638.

Of all cases of accessible intracranial tumors the best results are obtained in those of endothelioma of the dura as this neoplasm is not a true brain tumor and while the pressure it produces is often very great, usually the only effect it exerts on the brain substance. In favorable cases an endothelioma can be removed without injury to the brain. However, against this advantage there is the important disadvantage of the infiltrative growth of the tumor into the bones of the skull.

From the morphological viewpoint the author points out that the tumor proceeding from the dura grows into the bone through the vascular canals and then spreads out flat. Therefore the tabula interna is thickened first and the diploe and tabula externa are not involved until later. The inner surface of the bone often becomes thickened with nodules, a process noted by Cushing and called hyperostosis. This change aids in the diagnosis and localization of the tumor and can be seen in the roentgen picture. On the whole, roentgen examination gives more important aid than neurological examination.

In 19 of the author's twelve cases the tumor masses extended into the neighboring bone tissue in the manner described and in one it infiltrated the brain. Occasionally the tumor grows into the

pituitary gland or metastasizes into the lungs or carotid gland. On the basis of the theory that a tumor which extends beyond the organ originally attacked and grows into a neighboring organ must be regarded as malignant, endothelioma of the dura have a malignant character. However, not all endothelioma of the dura infiltrate neighboring tissues, some of them may remain benign and only compress the brain masses. When once the tumor has made its way into the interosseous tissue it must be operated upon radically. Although there are cases in which a partial operation performed because of a mistaken diagnosis or necessitated by such factors as proximity of the tumor to the sagittal sinus was followed by a good result lasting for years, a partial operation is usually inadvisable.

The danger of unsuitable therapy is increased by the confusion that has arisen in the terminology and conception of malignant endothelioma of the dura. The terms osteoma, exostosis, "hyperostosis" and intracranial infiltration of dural endothelioma are used more or less indiscriminately and cause confusion in the treatment. The surgeon must be prepared to find that at least every fourth endothelioma of the dura is malignant. Statistics show that malignancy is particularly frequent in the young.

According to the manner of growth, two forms of dural endothelioma are distinguished: a nodular and a tuft-like form. These forms differ to a certain degree also in the brain symptoms they produce. The author has been able to confirm Cushing's observations with respect to them. The proportion between the intracranial and the intra-osseous part may vary considerably. When the surgeon finds himself confronted with a more or less sizeable enlargement of a cranial bone he should think of primary endothelioma of the dura as the possible cause. When a dural endothelioma infiltrating bone is incorrectly believed to be a hyperostosis, the surgeon usually endeavors to spare the periosteum in order that bone regeneration may close the operative defect in the bone, a procedure which is dangerous in cases of dural epithelioma.

In conclusion the author points out that the thickening of the bone generally observed when the disease process is located on the upper part of the skull is much less important in cases of basal malignant dural endothelioma. More often in the latter there is osteoplastic thickening without bone thickening. In cases of osteosclerosis without bone thickening the difficulties of diagnosis are rather increased, since as in cases of malignant basal endothelioma the only roentgenological sign of invasion of the tumor is osteoplastic thickening. Kress (Z)

#### SPINAL CORD AND ITS COVERINGS

**André Thomas Sorrel** and **Sorrel Dejerine**. Scoliotic Paraplegia (La parapésie scoliotique). *Presse méd.* 1933 xli 54.

As a rule scoliosis does not cause symptoms of compression of the cord. Before the development of

roentgenography it was thought that when scoliosis and spasmodic paraplegia co-existed they were independent conditions or that the paraplegia was caused by Pott's disease. In recent years a number of cases have been reported in which the scoliosis itself was evidently responsible for paraplegia.

The authors report the case of a fifteen year-old boy with kyphoscoliosis and paraplegia. Although the parents had noticed the scoliosis only recently it was probably congenital and had become suddenly accentuated in a period of rapid growth. The spasmodic paraplegia had all of the characteristics of a paraplegia from compression. The clinical diagnosis of obstruction was confirmed by lumbar puncture and the lipiodol test. Roentgenograms excluded Pott's disease. Operation showed no other cause for the compression than the malformation of the vertebrae. At the level of the sixth and seventh dorsal vertebrae there was a sharp backward angle over which the spinal cord was stretched. The cord was held firmly against the vertebrae by the left roots which were stretched by the rotation of the spinal column so that the dura mater was stretched tightly over the cord. The blood vessels and lymphatics were compressed as well as the cord and the resulting interference with the blood and lymph circulation played an important part in the production of changes found on histological examination. Simple laminectomy without opening of the dura mater did not prevent further development of the condition and the boy died a little over three months after his admission to the hospital.

The authors discuss a number of similar cases reported in the literature. Except in Pavr's case in which cure was brought about by resection of the angulation the treatment consisted in simple laminectomy or laminectomy followed by opening of the dura. The best results were obtained by laminectomy and opening of the dura without suture.

WALTER GOS MORGAN M.D.

Knoflach J. G. Paraplegia in a Case of Lymphogranulomatois (Paraplegia b. Lymphogranulomatois) D. t. h. Z. ch. f. Ch. 933 c. 1352

The author reports the case of an otherwise healthy laborer twenty six years old in whom localized pains in the upper thoracic section of the spine and subsequent weakness in the legs were followed in the course of three months by complete paraplegia with paralysis of the bladder and rectum.

The cause of the disturbance (to be sought in the upper thoracic spinal cord) was not explained until enlargement of the cervical gland developed. Pathologic anatomical examination disclosed lymphogranulomatosis. The damage to the cord preceded the manifestations of generalized lymphogranulomatois. Autopsy revealed compression of the cord by lymphomatous tissue lying within the spinal canal but outside the dura. Histological changes similar in appearance to the lymphogranulomatous plaque in the spinal canal but not related to it were found in four of the thoracic

vertebrae. The medullary cavities of these vertebrae were almost entirely filled with connective tissues in which the typical foci were found. Although there was evidence of both bone destruction and the formation of new trabeculae these vertebrae did not differ in their structure or size from the normal adjacent vertebrae. Even the roentgen picture failed to disclose any difference between the normal and the diseased vertebrae. This is explained by the fact that the density of the shadow of granuloma tissue and of normal bone marrow is practically the same. In this case as is the general rule no result was obtained by treatment by irradiation.

The article contains photographs photomicrographs and a bibliography. RUEDEL (Z.)

### PERIPHERAL NERVES

Dogliotti A. M. Experiments With Regard to the Numerical Increase and the Distribution of Nerve Fibers in Regenerating Nerves (Esperimenti sulla ricomposizione numerica e sulla distribuzione delle fibre nervose nei nervi rigeneranti) A. h. tal. d. ch. 1933 xxxi 31

Dogliotti describes experiments which he carried out on dogs. In one group the sciatic nerve was sectioned on one side in such a way that the central cut end was divided into two unequal parts. The greater part was then fixed subcutaneously and the smaller part sutured to the peripheral cut end of the nerve. After seven and fourteen months the animals were sacrificed their muscular development was studied by weighing and histological examination and the process of regeneration of the nerves was studied especially with regard to the myelinated fibers in the undivided sciatic nerve the central cut end and the peripheral stump. In a second group of experiments all of the corresponding spinal ganglia were removed. By these procedures it was possible to determine the number of sensory and motor fibers in the normal nerve and in the nerve which was regenerating. The author's conclusions are summarized as follows:

1. If from one third to one fifth of the central stump of the sciatic nerve is conserved and sutured to the peripheral stump complete anatomical restoration with perfect muscular function may result.

2. The fibers in the tracts of the central stump may increase to double their original number or even more and in all of the bundles of the peripheral portion there may be a large number of regenerated fibers distributed homogeneously and uniformly throughout the peripheral stump in such a way as to produce a perfect functional equilibrium in all of the muscles supplied by the nerve.

3. The motor fibers in the sciatic nerve constitute about one third and the sensory fibers two thirds of the total number of myelinated fibers and the motor fibers show a greater regenerative power than the sensory fibers.

4. With the restoration of innervation the paralyzed muscles assume a size about equal to that of



the muscles on the side not operated upon even though their number of regenerated nerve fibers is considerably below normal. In the muscles thus restored to function the muscle fibers are of a considerably larger caliber than those of the muscles on the side not operated upon. Accordingly there is a compensatory hypertrophy of the regenerated fibers which serves to counterbalance the loss of the fibers which have not regenerated.

5 In the spinal cord (cells of the anterior horn) there cannot be found as late as twenty-one months after the operation any definite signs of cellular atrophy or hypertrophy either in the cells which correspond to the regenerated and hypofunctioning fibers or in those corresponding to the sectioned fibers which have regenerated (portion of the stump fixed under the skin).

6 In selected cases treated with extreme care one may hope to increase the number of fibers in a partly paralyzed nerve by sectioning the nerve transversely and immediately suturing it. This increase will be due to the multiplication of regenerating fibers in the proximal portion. At the same time it may be possible to obtain a more homogeneous distribution of the regenerating fibers as the fibers will distribute themselves in the peripheral portion almost uniformly without regard to the previous topography of the bundles.

In a clinical case in which neurotomy and suture of the sciatic nerve were done for serious sequelæ of infantile paralysis there was marked regeneration of the nerve fibers followed by a definite increase of the function of the muscles supplied by it.

EUGENE T. LEDDY, M.D.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Hedblom C A Tumors of the Bony Chest Wall  
Ann Surg 1933 XLVII 528

The author's findings in an analysis of 313 cases of tumors of the bony chest wall including 22 cases of his own and his conclusions therefrom are summarized as follows

1 About 17 per cent of the tumors were chondromata and 5 per cent were benign growths About 61 per cent were sarcomata and 13 per cent other malignant neoplasms Nine were of uncertain type The ribs were involved primarily in 80 per cent and the sternum in about 20 per cent

2 Trauma seems to be an etiological factor in an uncertain proportion of chondromata and in primary sarcomata and chondrosarcomata

3 Pain is the most characteristic symptom of both chondromatous and sarcomatous tumors It may develop before a mass is recognizable clinically or roentgenologically

4 Aspiration or biopsy may be necessary to establish the nature of the tumor

5 Early radical extirpation offers the best prospect of cure Late operation even in the presence of extensive spread of a malignant growth may result in prolonged freedom from recurrence

6 Exploratory thoracotomy may be indicated in cases of doubtful operability

7 Positive pressure anesthesia largely removes the immediate risk of open pneumothorax and re-inflation of the lung before closure lessens the liability to postoperative respiratory embarrassment and late pleural complications

8 Operability can be extended by graded operation

9 In cases of chondroma a recurrence may develop after operation and in cases of sarcoma it is the rule but life may be made more comfortable and may be greatly prolonged and there is a possibility of cure

10 In view of the added safety of radical operation afforded by modern methods increased consideration should be given to radical resection of the chest wall for the relatively frequent local recurrence after amputation of the breast for carcinoma

JOHN H GA LOCK M D

Cutler M Benign Lesions of the Female Breast  
Simulating Cancer J Am Med Ass 1933 C  
127

The author describes several benign lesions of the breast which simulate cancer and discusses the diagnosis and treatment of some borderline conditions

Plasma cell mastitis in its earliest stages gives rise to a clinical picture simulating that of inflammatory

carcinoma It begins suddenly with pain diffuse tenderness and redness of the skin The entire breast becomes swollen and the axillary lymphatic gland are enlarged and tender There is usually a rise in the temperature which sometimes is accompanied by a chill Occasionally there is a creamy discharge from the nipple The most important clinical characteristic differentiating the condition from inflammatory carcinoma is the absence of dermal and subdermal thickening

The acute symptoms soon subside and the process enters a subacute stage during which the symptoms and signs decrease When the inflammation subsides there remains a mass which often presents many of the classical clinical signs of carcinoma This mass is solid firm and often adherent to the overlying skin The overlying skin is dimpled and the nipple somewhat retracted The tumor mass regresses very slowly

The essential microscopic change consists of an active acute and subacute exudative inflammation with numerous leucocytes lymphocytes and plasma cells The exudate is especially marked about the ducts and acini where the cellular reaction may consist almost exclusively of plasma cells Foreign body giant cells are often present The dilated ducts are filled with desquamated epithelial debris

The most important aids in the differential diagnosis between plasma cell mastitis and carcinoma are the acute onset and subsequent clinical course During the initial stage the entire mammary gland is firm indurated and diffusely tender and there is a moderate fever

During the acute stage conservative treatment is proper If the course of the disease confirms the diagnosis operation is contra indicated as long as there is discernible clinical improvement If after a period of observation the lesion remains stationary or progresses and the diagnosis becomes uncertain exploratory operation should be done

Traumatic fat necrosis which may also simulate carcinoma clinically is most common during the fourth and fifth decades of life It may or may not be associated with lactation There is often a definite history of trauma The mass increases in size and firmness Petrification of the nipple occurs in 10 per cent of the cases Transillumination is of aid in the diagnosis as it suggests a hematoma rather than a solid tumor

In cases of single tumor of the breast in women under twenty five years of age it is safest to consider the lesion malignant until it is proved benign

The presence of more than one tumor in one or both breasts immediately throws the weight of evidence against carcinoma and favors the diagnosis of benign lesions The diagnosis lies between multiple

*fibro-adenomata* and multiple cysts. The danger of multiple cysts is far greater than that of multiple *fibro-adenomata*. The operation of choice for multiple cysts is local mastectomy.

In the cases of older women in whom a hemorrhagic discharge from the nipple is more likely to be associated with duct carcinoma and especially in the presence of nodularity of the breast a duct papilloma is more likely to be complicated by carcinoma. Wide surgical excision or local mastectomy is the safest procedure. In the cases of younger women in whom the presence of carcinoma is less probable and to whom the loss of a breast is of greater concern the surgeon should hesitate to remove the breast. However treatment should be instituted. The author uses interstitial irradiation with removable platinum needles in such cases.

EARL O. LATIMER, MD

Haagensen, C. D. The Bases for the Histological Grading of Carcinoma of the Breast. *Am J Cancer* 1933 18:28

The most confusing factor in the grading of breast cancers has been the choice of histological characteristics on which to base the grading. In estimating the grade of anaplasia of adenocarcinoma, Hansemann used the loss of an adenoid arrangement and the number of normal and atypical mitoses as criteria.

From a survey of previous attempts to grade breast carcinomata it is clear that there has been no agreement as to which histological characteristics should be used as a basis for grading.

In a series of 164 cases of carcinoma of the breast the author made a careful analysis of the prognostic significance of 15 histological characteristics. The following 6 characteristics were found to have a probable relationship to the end result of treatment:

1. Papillary character: origin in a cyst formed in a duct.

2. Comedo character: growth mainly within the ducts, often with central necrosis.

3. Adenoid arrangement of the cell: (a) marked (b) slight (c) absent.

4. Variation in the size and shape of the nuclei: (a) slight (b) moderate (c) marked.

5. Number of mitoses: (a) few (b) moderate (c) numerous.

6. Gelatinous degeneration.

These significant characteristics are in fact similar to those which Hansemann originally suggested for the determination of the grade of anaplasia. According to this plan tumors were arbitrarily classified as of Grade 1 when they had a papillary or comedo character, when the adenoid arrangement of the cells was marked, when gelatinous degeneration was present, or when variation in the size and shape of the nuclei was slight and there were few mitoses. Thus any of Characteristics 1, 2, 3a, or 6 or in the absence of these characteristics, the combined presence of Characteristics 4a and 5a was considered sufficient evidence for classification of the tumor as

of comparatively low malignancy or of Grade 1. Tumors of Grade 3, highly malignant tumors, were elected on the basis of only 3 characteristics—absence of an adenoid arrangement (3c), marked variation in the size and shape of the nuclei (4c), and numerous mitotic figures (5c). If any 2 of these 3 signs of a high degree of anaplasia were present the tumor was classified as of Grade 3. All other tumors not falling into these groups were classified as of Grade 2. The factors of fibrosis and lymphocytic infiltration, more recently stressed in tumor grading, have been found of no prognostic importance.

On the basis of the 6 significant histological characteristics cited it appears that breast carcinomata are of 3 grades of malignancy in which an increasing grade of anaplasia parallels an increasing grade of malignancy, evidenced by the tendency of the tumor to metastasize and cause death early.

It should be remembered that the prognosis based on this type of histological evidence is not mathematically accurate. It should be regarded as only a rough approximation. The phenomenon of malignancy which we are attempting to measure is a biological one and does not lend itself to exact measurement. Moreover the extremes that are Grades 1 and 3 should be given more weight than Grade 2, the less definite middle grade to which a large percentage of breast carcinomata belong.

In conclusion the author says that histological grading should be considered merely as an additional method of obtaining information with regard to the prognosis as the information gained from it is subordinate in importance to the clinical data.

JOSEPH K. N. 247 MD

Maj. E. A. Methods of Roentgen Treatment in Carcinoma of the Breast. Report of 210 Cases. *Radiology* 1933 1:420

The statistics of the last ten years have clearly established the fact that in cancer of the breast roentgen therapy following operation has considerably increased the incidence of five year cure. In inoperable and recurrent cases it is indispensable. However in spite of its general use, no uniform or standardized technique has been adopted.

The treatment can be varied in the following factors: (1) potential and current; (2) filter; (3) focus; (4) size and number of areas treated; (5) direction of each beam of rays; (6) single and total amounts of r units given each field; (7) distribution of the treatments over a shorter or longer space of time; and (8) maintenance of saturation over varying periods.

Practically every method attempts to accomplish a thorough and homogeneous irradiation of the entire inolved chest area with minimal damage to adjacent healthy structures. The method may be divided into 2 groups: the direct and the tangential. In the former the rays are centered over the chest. In the latter the beams are applied in such a way that they strike the chest wall tangentially. The

direct methods have the disadvantage that the rays sweep through areas which are not affected by the disease and are highly sensitive to irradiation. In the tangential method developed by Hofferler this disadvantage is obviated in large part by the fact that the rays are directed practically parallel with the chest wall from the sternum to the axilla and from the axilla to the sternum. In order to improve the dose by scattered irradiation rice bags are placed over the area treated. In persons with a medium or large chest a deficiency of intensity between the 2 beams may be compensated for by applying direct irradiation over the mammary line. An additional supraclavicular field is also treated.

The author has developed a method in which 3 tangential irradiations instead of 2 are used. The lateral irradiation is applied to the axilla and directed toward the sternum. In the second field the irradiation enters below the breast along the arch of the ribs and is directed toward the axilla. In the third field it is applied over the upper part of the sternum and clavicle and is directed laterally and caudally. In very large chests the intensity in the center is so small that it must be supplemented by additional irradiation from the front. This can be avoided by increasing the intensity of the 3 tangential irradiations using a greater distance. To increase the secondary irradiation the chest is built up with rice bags. If properly administered the 3 field method does not irradiate more tissue than the 2 field method but gives a more homogeneous irradiation and produces a greater depth intensity.

The author has endeavored to prove his theories by experimental means under conditions approximately similar to those occurring in practice. His experiments are described in detail and the results tabulated.

In the use of the tangential method the full dose of each field is usually subdivided into 2 or 3 doses given from one to three days apart. The diminution of the biological effect through the loss of time is compensated for according to the Haffner chart. Irradiation sickness is comparatively rare when this method of treatment is used when it occurs the interval between the treatments should be increased.

The method may be used before as well as after operation. When used before operation the operation may be performed as soon as the erythema has subsided. Postoperative irradiation in cases not given preoperative treatment usually leaves as soon as the patient general condition permits from 5 to 8 weeks after the last treatment a recurrence smaller than the first one is instituted. The intensity of the course of treatment is usually less than by a third still smaller doses.

In inoperable or recurrent cases the course to be pursued is determined in large part by the clinical picture. The entire series of treatments similar to that in the postoperative cases except that the interval between the treatments are shorter and the doses are higher. A quick and the general

resistance permits the attempt is made to administer a 100 per cent dose over the entire chest wall including all of the regional lymph drainage systems which may be affected. In the inoperable cases the 3 field method shows its advantage as the penetration of the 3 beams is better than that of 2 beams. As soon as the erythema dose is reached it is maintained for several weeks by smaller doses according to the saturation method of Haffner.

The treatment of distant metastases must be adapted to the individual case as well as to the location of the lesion. The saturation method of Haffner proves to be of advantage as it keeps the lesion under the influence of effective irradiation over a period of weeks.

Two hundred and ten cases of breast cancer treated by the author in the period from 1923 to 1930 almost entirely by the tangential method are discussed at some length relative to the clinical and pathological aspects they present. The technique used in the roentgen therapy and the results obtained. The following conclusions are drawn:

1. At the present time a combination of irradiation and operation offer the best results in carcinoma of the breast.

2. Tangential irradiation with the 2 field (Hofferler) method or the 3 field (May) method has considerable advantage over the direct method.

WOLFF H. F. M. D.

Evans W. A. Jr. Histological Factors in the Prognosis of Mammary Cancer Treated by Radical Operation and Ray Treatment. J. C. 933, 38.

A satisfactory classification of degenerative and malignant diseases of the breast has long been wanted. Adenocarcinoma has been regarded as the least malignant lesion, scirrhous carcinoma as more malignant and medullary carcinoma as the most malignant. However this theory has not always been supported by statistics and many have expressed surprise at finding very little difference in the results obtained in scirrhous and medullary cancer.

Review of comparatively large series of cases in recent years have revealed no significant difference in the prognosis of medullary and scirrhous carcinoma. It therefore appears improbable that the relative amounts of stroma and parenchyma are of any importance in the prognosis. The more recent trend in histological study has been away from sharply defined anatomical grouping toward grading.

The authors report an analysis of microscopic characteristics with regard to prognosis which was made in seventy-five operable cases of carcinoma of the breast treated by radical operation and short average length irradiation.

In the series a whole evidence of anaplasia (lack of differentiation) with respect to tubule formation the characteristics of the cytoplasm and irregularities of the cells suggested a short postoperative survival. However the difference was so slight as to indicate that in the individual case

evidence of anaplasia is of no practical importance in the determination of the outcome

A definite degree of anaplasia cannot be regarded as the fixed characteristic of a given tumor as variation is to be found in the same microscopic slide as well as in different parts of the tumor and in the metastatic deposits

The significance of mitoses is not entirely clear as some tumors may multiply largely by amitotic cell division and thus in spite of rapid growth may not show a large number of mitotic figures. Moreover the stage during which the mitotic figure is evident may be greatly shortened in the case of the poorly differentiated cell

The relative amount of fibrous tissue stroma is of no significance. A high degree of lymphocytic infiltration appears to be unfavorable

The addition of irradiation therapy to surgical treatment does not seem to have altered the factors on which the prognosis may be based

JOSEPH K. NARAY, M.D.

### TRACHEA LUNGS AND PLEURA

Reinberg S and Simonson S. The Changes in the Lungs in Closure of the Bronchus by a Foreign Body and Their Importance for X-Ray Diagnosis. (Die Veränderungen in der Lung beim Verschluss des Bronchus durch einen Fremdkörper und ihre Bedeutung für die Röntgen diagnosis.) *Vierteljahrsschrift der Naturforschenden Gesellschaft in Basel* 1932 23: 38

In a number of cases a foreign body may close the bronchus only partially. On X-ray examination in such cases the mediastinum is seen to move toward the affected side on deep inspiration; the affected side appears somewhat darker than the normal side and the diaphragm is movable only to a limited extent or is completely immovable. In other cases a valve stenosis occurs. In the latter the involved lung appears much lighter than normal and the central shadow is displaced toward the normal side.

Of most importance are cases with complete closure of the bronchus. In such cases there is obturation atelectasis of the lung which in the X-ray picture appears as a complete overshadowing of the entire lung or a part of it. The movement of the diaphragm is limited and on account of the overshadowing of the lungs due to the atelectasis is not always visible. The mediastinum is of course displaced toward the affected side or moves toward it during inspiration. The authors are of the opinion that the obturation atelectasis due to the closure of a bronchus by a foreign body and massive collapse of the lungs are identical processes.

X-ray examination is able to show the presence of a foreign body in the lungs not only when the foreign body is opaque (metal) but also when it is fully penetrable by the X-rays. Nevertheless an attempt should always be made to render the foreign body itself as distinctly visible as possible. A roentgen ray examination should be made in every case in which the presence of a foreign body in the lungs is suspected.

LEOPOLD HOLST (Z)

Foltz P and Canavero C. Pulmonary and Thoracic Actinomycosis. (Su i actinomycosi polmonari e toracica.) *Arch Ital di Chir* 1933 1: 49

Primary involvement of the lungs by actinomycosis is rather uncommon and of the cases reported the pathological anatomy of the lesion was studied completely in only a few. Foltz discusses the pathological and bacteriological aspects and Canavero the clinical aspects of a case of primary bilateral pulmonary actinomycosis which was studied at the Ruben and Baldi Anatomopathological Institute of the Ospedale Maggiore di San Giovanni di Turin. Six months previously the patient, a woman twenty-six years of age, had developed a persistent right-sided empyema with fistula formation following an acute pneumonia which had been regarded as due to tuberculous causes of the ribs. Subsequently sulphur bodies were discovered in the discharge from the sinuses. Repeated drainage of the abscess cavities and the administration of Lugol's solution resulted in no definite benefit and the patient died. At autopsy a diagnosis of primary pulmonary actinomycosis with extension into the pleura and bony thorax was made. Morphological, cultural, and biological studies showed the organism to be the actinomyces bovis.

The authors believe that this case does not fall into either of the two groups—the superficial and the destructive—into which cases of actinomycosis are usually classified. On such a basis there is to be distinguished a purely pulmonary form (the superficial actinomycosis of the literature) and a pulmonary thoracic form. In the latter there is a primary involvement of the lung with extension into the thorax to be distinguished from primary involvement of the thorax with secondary involvement of the lung. In the case observed by Foltz and Canavero there were peculiar pseudo-adenomatous formations which were believed to be proliferations of the bronchial epithelium. The mechanism by which the patient became infected could not be determined as there had been no known contact by which the disease might have been transmitted. However the authors believe that the condition was due to direct infection by aspiration.

ERICH T. LEEDY, M.D.

Bronfin I D. The Indications for Collapse Therapy in Pulmonary Tuberculosis. *Am J Med* 1933 24: 453

Bronfin states that collapse therapy represents the greatest achievement in the treatment of tuberculosis of the lungs in the past two decades. It has made advanced pulmonary tuberculosis a treatable disease. In properly selected cases it offers a chance of cure far greater than that offered by any other form of treatment. It shortens the duration of the disease and makes recovery more certain.

In the average case the procedures of choice are (1) pneumothorax (2) phrenectomy and (3) thoracoplasty.

In the cases of patients under conservative treatment the chest should be subjected to frequent

roentgen examination and blood studies especially erythrocyte sedimentation tests should be made even when the patient is pursuing a clinically favorable course. If the indications for collapse therapy are found this treatment should be instituted without delay before extension of the disease makes the patient unsuitable for it.

The indications and contra indications of collapse therapy are determined best by individualizing the cases. A knowledge of pneumodynamics is indispensable to both the physician and surgeon and the best results from collapse therapy require close cooperation between the physician and surgeon.

The psychological makeup of the patient must be determined and all fears, doubts and prejudices overcome. In no case is the personal of so much importance as in tuberculosis. The ability to inform the patient of unpleasant facts in such a way as to make him see the more hopeful aspect of the situation is of great importance. It is the duty of the physician to inspire the patient with confidence in a proposed new form of treatment without concealing the hazard of the treatment. The author believes that by following such a program closely it is possible to obtain satisfactory results in even such an unfavorable disease as advanced chronic tuberculosis of the lungs.

PAUL W. GREFELEY, M.D.

Stegemann: Attempt to Improve Thoracoplasty and Observations on Over 100 Cases (Uebereitungen zwecklos als die Thorakoplastik und Beobachtung von mehr als 100 Thorakoplastiken). *Zentralblatt für Chirurgie* 933 p. 1991.

The statistics on the mortality of total paravertebral thoracoplasty during the last year demonstrate definitely that thoracoplasty cannot yet be regarded as a solved surgical problem. The author considers it essential for any one working in this field to subject the methods he uses to critical analysis in order that by recognition of avoidable faults the direct and indirect results of thoracoplasty may be improved.

On the basis of observations made in 114 cases in which Stegemann performed thoracoplasty in the Johannes Hospital of Dortmund he calls attention to possible improvements in the technique used today. He believes that improvement should be attempted first by instruction of physicians. There are still many physicians who regard thoracoplasty as the last resort and by delaying the operation lose much valuable time. The fact that the duration of the active disease is next in importance to the patient's general condition in the prognosis of thoracoplasty is shown by a table. The prognosis becomes less favorable the greater the number of years the intoxication has been present. In all 12 of the fatal cases reviewed, with the exception of 1 case which was complicated by syphilis death did not occur until six seven or more days after the operation. It is therefore evident that the heart damaged by the tuberculous toxin was able to tolerate the operation itself but was unable to withstand the increased

flood of toxins throughout the body which resulted from the increasing shrinkage of the diseased lung tissue. All of the principal rules for the management of tuberculous patients can be summed up in the following sentence: Precious time must not be lost in fruitless therapeutic methods. The theory that thoracoplasty can always be performed as a last resort must be abandoned.

Thoracoplasty is indicated most definitely in cases of chronic fibrous cavernous tuberculosis with a tendency toward shrinkage. In cases of this type the author has been able to obtain a considerable number of cures lasting longer than five years. Of greater interest than the completely cured cases however were those in which the permanent cure expected from thoracoplasty was not realized. The author cites 2 examples in which an extensive paravertebral thoracoplasty according to Sauerbruch's method did not succeed in closing the cavities and reoperation was necessary.

Stegemann next reviews the opinions and the best technical methods of surgeons who have been performing thoracoplasties during the last few years.

The clinical results of pneumothorax treatment are then compared with those of total paravertebral thoracoplasty. The more complete the pneumothorax and the more complete the compression obtained by thoracoplasty the more definite the effect on the cavities. Operation to obtain maximum collapse requires a knowledge gained from physiological studies of the statics and suspension of the thorax. The experiments of Boiffin and Gourdet and contention of Kramer that the resection should be carried out according to the shape of the different ribs (rib flare) are discussed with the aid of sketches.

In the second part of the article Stegemann takes up partial thoracoplasties especially the upper thoracoplasties of Bonniot and Graf in which the apex and upper lung fields are freed completely from the adhesions attaching them to the ribs. On the basis of illustrative cases he emphasizes that the posterior upper thoracoplasty of Sauerbruch does not always give a completely successful result. Neither can liberation of the lung apex by pneumolysis in cases of high cavities always overcome the disadvantages of partial resection. In 1 of 2 cases cited such a pneumolysis was successful but in the other it failed. If a partial thoracoplasty is done the surgeon should limit himself to the simplest operation that will meet the requirements such as the Graf operation and omit the anterior accessory incision. The technique used by the author is described in detail. In Stegemann's opinion the operation is best performed under anesthesia induced with ethylene.

The incidence of successful results from thoracoplasty varies with the surgeon and clinic from 32 to 54 per cent. It should be increased by improvement of thoracoplasty. Better cooperation with the medical lung specialist is necessary. Stegemann believes that the time has come when procedures for collapse of the chest wall should be individualized.

on the basis of physiological facts as well as clinical experience.

In the discussion of this paper I presented called attention to the adrenalin ischaemia which he suggested and discussed its advantages in relation to thoracoplasty. He addressed the indication of this ischaemia for thoracoplasty by the following procedures: (1) blocking off of the intercostal arteries in a typical location; (2) the induction of ischaemia of all layers along the line of incision by infiltration; and (3) the formation of a thin peritoneal layer of adrenalin solution between the ribs and the covering soft parts from many injection points in the anesthetized line of incision.

NÄGELI stated that lung resection is a very stimulating and gratifying field. He regards the results of operation on the phrenic nerve as favorable for the spontaneous healing of cavities. In a follow-up of about 100 cases which he operated upon with Schulte-Tigges the incidence of cure following this treatment was found to be 35 per cent. In discussing partial thoracoplasty and plombage NÄGELI stated that in partial thoracoplasty at least the first to the seventh or eighth ribs should be removed and the scapula pushed in under the stump. In the treatment of lung abscesses in the absence of pleural adhesions he has made good use of the paraffin pack. He stated that unfortunately even today a number of benign mediastinal and intrathoracic tumors are not recognized and therefore not treated specially. In conclusion he reported a case of intrathoracic gopher.

BRANT reported an unusual case of bronchial tear in which thoracoplasty became necessary because all other procedures failed.

ORTH stated that phrenic excision and its application cannot be compared with thoracoplasty as is often done. Each of these procedures has its own indications. Orth expressed surprise at the large doses of adrenalin which Bochers was able to inject without apparent injury. He believes that he has seen cardiac damage caused by adrenalin in several cases of thoracoplasty performed under local anesthesia on patients with cardiac damage from tuberculosis toxin. He now uses a carbon tetrachloride instead of local anesthetic.

VOIGTMANN said that the problem of so-called lung hernia has not yet been satisfactorily solved. Promise of lung tissue into the tissues of the chest wall must be differentiated from true lung hernia. Moreover so-called lung hernia should be designated according to the contents of the sac rather than according to their anatomical location. The more correct term for them would be the acute hernia analogous to "abdominal hernia." In the more exact designation of the anatomical site the term intercostal hernia would be analogous to the term "ligament hernia." In experiments on animals attempts to produce lung hernia were unsuccessful. From clinical histories it appears that pleuroarthroses of the ribs especially predispose to the development of true lung hernia.

KROHN discussed the employment in the use of paraffin (wax) in the paraffin pack and its use in the treatment of the thoracic cavity. He discussed all temporary paraffin pack and its use in the treatment of rib resection. He mentioned the insertion of a rubber plate in the spaces of which have been used and the use of the paraffin pack. In the future KROHN intends to treat rigid-walled bronchogenic cavities near the hilus by extensive rib resection when conservative measures fail. He added that he is unable to share the enthusiasm of the surgeons who believe that in artificial phrenic paralysis there is a powerful means of fighting pleural tuberculosis. He called attention to the temporary compression of the diaphragm thoracic wall toward the mediastinum which he recommended every day. In conclusion he expressed his pleasure over the fact that the erosion and drainage of the mediastinum through a pleural incision, which he has recommended in 1934 as a means of combating the destruction of mediastinal tuberculosis, has been recommended by FRIEß as a logical and correct method.

FRIEß discussed a method of surgical drainage of large empyema cavities which he reported in 1918. After the resection of a rib the costal pleura is separated from the ribs broad by an external incision from the fifth to a point which is usually quite a cavity because the pleura has been thickened by the chronic inflammation. The wide flap of costal pleura so formed is then turned directly against the thickened pleural surface of the covered lung and fixed in position by the introduction through the wound of a wide sterile gauze pad.

SCHMIDT stated that for all cases of upper field cavities radical procedures are necessary. Before every thoracotomy he performs a pleurotomy with total resection of the first and second ribs by the method of Graf and then performs the rest of the operation by the method of GEGEMANN except that he closes the remaining cavity completely by means of the pleural flap. As a rule this cavity becomes filled with a coarse fibrous exudate which in the first few weeks acts like a rack on the compressed apex and prevents its re-expansion. RITTER was also in complete agreement with the collapse of a real and other upper field cavities in ten cases in this way.

STEGEMANN stated in conclusion that pleurothorax and upper thoracotomy are very well tolerated. He then discussed GEGEMANN'S method in which cavities made during a real pleurotomy are all well to become filled by a permanent exudate. He stated that he had tried this method himself but he called attention to the fact that when extensive mediastinum of the lung exists there is a possibility of forming infected pleuras and leading up to an infection and wound infection in a tubercular person already affected by tuberculosis. He therefore warned against trying to close too large cavities in this manner. There is danger also of forming a

Wiener J J and Fishberg M. Ultimate Results of Thoracoplastic Operations in Pulmonary Tuberculosis. *Ch J T Med* 1933 1: 347

In forty four cases of pulmonary tuberculosis treated by thoracoplasty there were four deaths within a week after the operation a postoperative mortality of 9 per cent. Fourteen (30 per cent) of the patients died within a year after the operation. This mortality is higher than would be expected under any other form of treatment or no treatment at all in cases regarded as good operative risks.

Seven (15.0 per cent) of the patients are still in the hospital and fourteen (31.8 per cent) are still under treatment in the outdoor clinic or some other institution and unable to do any work whatever. Therefore representative of the local results of the operation or its influence on the symptoms of the disease 48 per cent of the surviving patients have not been rehabilitated sufficiently to enable them to work and including those who died within a year after the operation 80 per cent of the forty four patients derived no benefit from the operation.

Five patients are fit for some work but expectorate more or less profusely and suffer from dyspnea and fatigue on slight exertion. One has since been treated in sanatoria for eight years. Some of these patients might have been considered cured if the results had been reported prematurely.

In the cases in which thoracoplasty was performed chiefly to control recurrent pulmonary hemorrhage the bleeding still continues and in some of the cases in which hemorrhage was not the symptom leading to surgical intervention or had not occurred previously there has been more or less copious bleeding since the operation.

In no case was a tuberculous cavity completely collapsed after the operation. This was proved by serial roentgenograms and autopsy findings. Roentgenological and autopsy studies have demonstrated that collapse of tuberculous cavities by thoracoplastic operation which is supposed to promote their obliteration is entirely illusory.

Of ten patients with pyopneumothorax four are dead, three are still in the hospital very ill and three attend the follow up clinic for treatment of annoying draining sinuses. One with a draining sinus is well enough to do part time work.

The authors believe that if these forty four patients had been treated conservatively or had not been given treatment the final results would have been much better. They have not observed a single patient who has been seen several years after a thoracoplasty was free from the symptoms of tuberculosis to the same extent as many patients given climatic or institutional treatment without artificial pneumothorax. JACO M. M. RA M.D.

Roberts J E and Nelson H P. Pulmonary Lobectomy. The Technique and a Report of Ten Cases. *Ch J T Med* 1933 2: 7

In eight of the ten cases reported by the authors the pulmonary lobectomy was performed for um-

lobar bronchiectasis and in two for primary bronchial carcinoma.

The technique followed Shenstone's modification of Brun's procedure except for features such as mass transfixation and ligation of the pedicle and resection of a portion of a rib at the site of the water seal drainage tube.

Six of the ten patients were healed and rendered free from symptoms. Two were enabled to return to work but continued to have symptoms and two died one twelve days and the other ninety days after the operation. FRANKLIN E. WALTON, M.D.

James R M. The Surgical Treatment of Bronchiectasis. *B J J S* 933 57

The author briefly reviews the surgical methods of treating bronchiectasis and divides them into three main groups.

With regard to the method of collapse therapy which includes pneumothorax, thoracoplasty and phrenicectomy, he states that the pathological picture prevents such procedures from effecting a cure. However, they may result in symptomatic benefit.

James has not used pneumotomy with drainage of large collections of pus although it is believed that the pathological character of the condition makes it possible to obtain a cure from such a procedure.

James and his colleague, Shenstone, have obtained the most successful results from excision or destruction of the involved lung tissue. They prefer a one stage lobectomy preceded by pneumothorax.

The salient features of the operation include a double temporary ligation of the pedicle of the lung with a special snare tourniquet followed by transfixation of the apparent vessel and bronchus, inversion of the stump of the pedicle with a Lembert suture and its subsequent burial in the adjacent lung bed and tight closure with water seal drainage.

Of sixteen patients operated upon in this manner six were cured, three were benefited, two were not benefited and five died.

Emphasis is placed on the importance of exact preoperative localization of the lesion determined primarily by lipiodol studies, proper selection of the cases and the type of anesthesia. At the present time spinal anesthesia is preferred. A considerable afebrile interval should elapse before the lobectomy is performed and if possible the operation should be performed in one of the warmer months of the year.

FRANKLIN E. WALTON, M.D.

Robinson W L. Bronchiectasis. A Study of the Pathology of Sixteen Surgical Lobectomy Cases. *B J J S* 933 221 30

Robinson reports further microscopic evidence in support of his belief that the most consistent pathological finding in bronchiectatic lesions is a chronic inflammatory condition of the bronchial walls. The degree of damage varies from microscopic lesions up to complete destruction of the musculoelastic tissue.



When the resiliency of the bronchial wall is lost and sacculation has occurred an unbreakable vicious circle has been produced.

The thickening of the intima of the walls of bronchial arteries is thought to be an important factor lowering the resistance of the tissues and favoring persistence of the infarction.

FRAKLIN E. WALTON, M.D.

Ormerod F. C. Malignant Disease of the Bronchus. *J. La. y. Col. & Or.* 1933 xl no 733

Of twenty seven patients with malignant disease of a bronchus whose cases are reviewed by the author twenty three were males. The youngest patient was twenty seven years and the oldest seventy four years of age. In fifteen cases the lesion was in the right bronchial system and in twelve in the left. The patient's occupation, heredity, and previous history gave no clue to the cause of the lesion.

A dry cough was present in all cases. Sputum was absent in only two cases and was abundant in two. It was mucopurulent in character and contained pyogenic organisms. Hemoptysis was the immediate cause of death in two cases and occurred to some degree in twenty-one. Dyspnea on slight exertion was a striking symptom in twenty-one cases. Lassitude was present in nine and loss of weight occurred in twenty three. Pain in the chest was complained of by fifteen patients and three patients were hoarse. The clinical signs of the condition are those of an obstructed bronchus and usually those of atelectasis.

In the older patients the tumors were of the squamous cell type, whereas in the younger patients they were more frequently of the columnar-cell or ovoid-cell type. It is suggested that all types of carcinoma arise from the layer of small ovoid cells which underly the mucous membrane. Metastases occur commonly in the mediastinal glands. They occur also in the suprarenal gland, liver, pancreas, brain and other organs.

The ideal treatment is complete removal. Irradiation in the form of deep X-ray therapy or the use of radon seeds is recommended to meet the requirements of individual cases. Treatment by the radium bomb has been very disappointing.

GEORGE A. COLLETT, M.D.

Hirshy A. J. and Sweany H. C. Primary Carcinoma of the Lung with Special Reference to Incidence, Early Diagnosis, and Treatment. *Arch. Int. Med.* 1933 lxv 497

In a very extensive epidemiological and clinical study of primary cancer of the lung the authors found that in the last forty years there has been an approximately ten fold increase and in the last two years a two-fold increase in the number of cases coming to autopsy. However the belief there is no evidence to prove an increase in the general incidence of the disease. The apparent increase they attribute to: (1) the increase in life expectancy from forty three to fifty-eight years in the last half century, (2)

better knowledge of the cause of other pulmonary diseases (e.g. knowledge resulting from the discovery of the tubercle bacillus), (3) better diagnostic equipment, (4) increased zeal on the part of the medical profession and the laity, (5) better hospitalization, and (6) recognition as primary cancers of tumors that were once called metastases and sarcomata.

The clinical course of the disease is characterized by a gradually developing cough followed by a variable but constant pain and the expectoration of sputum which is frequently streaked with blood and accompanied or followed by dyspnea. Other common signs are anorexia, fever, loss of weight, symptoms due to pressure (dysphagia and aphonia) and a variety of symptoms due to metastases. The physical signs are usually those of a gradually enlarging bronchial tumor.

The roentgenogram reveals a diffuse or circumscribed shadow near the hilus or along a bronchus. On endoscopic examination a woody or fixed bronchus is found. The bronchoscopic section generally clinches the diagnosis.

The laboratory examination at first shows a scant sometimes blood streaked mucoid sputum which is free from tubercle bacilli. Later tumor cells may be found in the sputum or pleural fluid.

WILL FENLOW, M.D.

#### ESOPHAGUS AND MEDIASTINUM

Monkhouse J. P. and Montgomery S. K. A Report of Seven Cases of Partial Thoracic Stomach with a Short Esophagus. *J. La. y. Col. & Or.* 1933 xl 43

Partial thoracic stomach in which the esophagus is congenitally short and the deficiency is made up by the passage of a portion of the stomach through the esophageal hiatus has been described. The condition has generally been described as postmortem examination and presumably caused no symptoms during life.

The authors report seven cases in which the diagnosis was made by X-ray and endoscopic examination. These cases fall into two groups: those with and those without dysphagia.

The condition is associated with pain which resembles the flatulent dyspepsia of cholecystitis. The dysphagia is not steadily progressive as in carcinoma but intermittent and for some time often years is not severe. It is due to the presence of an ulcerated stricture. Hematemesis may occur in both groups of cases. Mucous membrane removed from the level of the lesion is found to be gastric in character. In cases without dysphagia no stricture is apparent but a dilatation lined with gastric mucosa is found at a level above the diaphragm.

To visualize the condition by X-ray examination the patient should be placed in the supine or anterior oblique position with the head lower than the hips. When barium is sucked slowly through a tube the esophagus is observed to open into a dilated sac above the diaphragm and no thin stream

of barium representing an abdominal esophagus is seen to pass below the diaphragm. The esophagus is not contorted or curled back on itself. The condition must be differentiated from paracardiac hernia diaphragm of the lower end of the esophagus and the physiologically normal esophagus. In cases of obstruction carcinoma cardiospasm and other structures must be excluded.

Cases with symptoms of the obstructive type are relieved by dilatation but the other group do not respond well to treatment.

GEORGE A. COLLETT, M.D.

Popper H. L. Spontaneous Rupture of the Esophagus (Spontanruptur des Oesophagus) *Med. Kl.* 1933, 1: 810

The author reports a case of spontaneous rupture of the esophagus. The patient was a man forty-five years old who had consumed a rather large quantity of wine the evening before his admission to the hospital and had vomited several times during the night. About two o'clock in the morning he had a very severe attack of vomiting which was followed by extremely severe pain in the left kidney region. On admittance to the hospital he appeared to be suffering greatly. There was no cyanosis. Respiration was rapid and superficial. Breath sounds were suppressed over the left lower lobe posteriorly but there were no abnormal findings in the lungs. The abdomen showed a marked defense reaction and board-like rigidity in the upper part. Perforated ulcer was suspected and laparotomy was done. As the findings were entirely negative the abdomen was closed. Three hours after operation the severe pain recurred; the dyspnea increased; the pulse became more rapid and definite cyanosis appeared. Examination of the lungs revealed an area of dullness the width of a hand on the lower left side, marked weakening of the breath sounds and a tympanic percussion note over the remainder of the left lung. X-ray examination showed separation of the left lung from the chest wall by an air cushion about three fingerbreadths in width and shifting fluid more than a hand's breadth in height at the base. The heart and mediastinum were displaced markedly toward the right. The right lung appeared normal. Pleural puncture which yielded considerable air and about 100 c.c. of a dark brown odorless fluid was followed at first by definite improvement in the condition but several hours later a relapse occurred and the patient died.

When the peritoneal cavity was opened at autopsy the left half of the diaphragm ballooned downward. When the left pleural cavity was opened considerable gas escaped. Dark brown fluid was found in the left pleural space. The left lung was completely collapsed against the vertebral column. The heart was displaced toward the median line. When the esophagus was opened a perforation 5 cm. long was found in the anterior wall just above the cardia. The edges of the perforation were formed of slightly overhanging smooth mucous membrane. From there

to the level of the bifurcation of the trachea the periesophageal tissues were undermined and black. Near the diaphragm a hole in the mediastinal pleura communicated between the left pleural cavity and the undermined periesophageal tissue of the mediastinum and from there with the perforated opening in the esophagus.

Since trauma could be excluded the author attributed the condition to spontaneous rupture of the esophagus. He cites several cases of spontaneous rupture which have been reported in the literature and discusses the diagnosis, therapy and possible causes of the condition. A. F. JUNG (Z).

## MISCELLANEOUS

Block A. V., Dulin J. W. and Brooke P. A. Diaphragmatic Hernia and Secondary Anemia. Ten Cases. *New England J. Med.* 1933, 61: 615

The authors review ten cases of hernia of the stomach through the esophageal orifice of the diaphragm associated with bleeding from the gastrointestinal tract. In no case were they able to detect any other cause for the bleeding by clinical or roentgenological means. In three cases abdominal exploration failed to reveal any other cause. In the two cases that came to autopsy small injected areas were found in the mucosa of the prolapsed part of the stomach. The authors believe that the cause of the bleeding was congestion of the gastric mucosa due to increased venous pressure.

S. MUEL PERLOW, M.D.

Hedblom C. A. Intrathoracic Dermoid Cyst and Teratoma with a Report of 6 Personal Cases and 185 Cases Collected from the Literature. *J. Th. Dis.* 1933, 1: 2

Congenital cystic tumors containing ectodermal derivatives are called dermoids or epidermoids; those containing also mesodermal derivatives are called dermoids or teratomata; and those with all three germinal layers are called teratomata. The best general inclusive term is dermoid.

There are two hypotheses as to the embryological origin of dermoid: the monogerminal and the bigerminal hypothesis. According to the former all types develop from the same embryo whereas according to the latter two independent embryonic anlagen take part in the formation of a parasitic fetus in situ.

The literature reports 185 cases of intrathoracic dermoids, all verified by the finding of epidermis, hair, cholesterol crystal or sebaceous material in the sputum, aspirated fluid or discharges from sinuses or at operation or autopsy. To these the author adds 6 cases. Ninety-two of the 191 subjects were females. The ages ranged from three months to seventy years.

The sites of intrathoracic dermoid are (1) retrosternal or between the mediastinal pleura; (2) ectoviscerosternal or in the suprasternal notch or be-

hind the sternoclavicular joint (3) mediastinothoracic (4) laterothoracic or partly within the thoracic cavity

The smallest tumor that has been described was the size of a pigeon's egg and the largest weighed 6360 gm. Adhesions were present between the tumors and the sternum the pericardium the great vessels the esophagus a bronchus the thymus the mediastinum the diaphragm a lung an aortic the trachea and vertebrae

Ninety-six tumors were epidermoid and contained desquamated epithelium gland secretions or cholesterol in the form of watery sirupy gelatinous or pasty clear milky yellowish or brownish substance often mixed with hair Fifty of the tumors were dermoids containing cartilage bone teeth smooth or striated muscle and blood vessels in addition to the structures of ectodermal origin Thirty-eight of the tumors were teratomata containing among other tissues those derived from or resembling the tissues of the digestive tract respiratory tract thymus thyroid pancreas liver spleen ovary fallopian tube or uterus

Complications are not uncommon They consist chiefly of rapid enlargement of the dermoid perforation infection and malignant degeneration in the nature of carcinoma sarcoma or chorionepithelioma with or without the formation of metastases in other organs

Among the symptoms of an intrathoracic dermoid are cough dyspnoea pleurisy with or without effusion pain swelling in the neck or chest dysphagia hoarseness orthopnoea palpitation pressure and the spitting up of hair or oily fatty sebaceous or cheesy material

Physical examination may reveal dullness or flatness over the tumor distant breath sounds absence of breath sounds bulging of the chest or neck a draining sinus oedema of the face or arms enlargement of the neck sinus cyanosis displacement of the heart unequal radial pulses pleurisy with or without effusion or empyema X-ray examination shows the tumor shadow The differentiation from echinococcus and other cysts aneurysm encapsulated effusion subternal goiter and cold abscess may be difficult Exploratory aspiration may be of value In about 10 per cent of cases malignant degeneration occurs

Radical extirpation is the treatment of choice A cervicosternal dermoid is reached through an incision such as that made for a substernal goiter The interspace overlying the tumor may be incised and the pleura opened with or without rib resection

Six cases are reported in detail Excellent operative results were obtained in 4 One patient had a persistent draining sinus and died a year after the operation from pneumonia In 1 case the dermoid was found at autopsy J D EL WILLEM MD

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Co ta G Spontaneous Hernia in the Semilunar Line of Spigelius (Laponeau d il l a sem l d Sp el ) t h tal d ch 1933 70

Following a review of the literature on spontaneous hernia in the semilunar line of Spigelius the author reports four cases and the findings of a complete study of two recent cases.

In the lateral region of the abdominal wall along the so-called semilunar line of Spigelius superiorly and inferiorly both true and false hernias may occur. Whether these are traumatic or spontaneous cannot always be determined. True spontaneous hernias develop frequently in the aponeurosis which extends between the fibers of the transversalis muscle and the lateral border of the rectus sheath. Though they may appear anywhere along this line they are most frequent in the hypogastric region.

There are many different opinions regarding the cause of the hernia. A role is ascribed especially to the foramina which contain the vessels and nerves in this region as they penetrate part of the abdominal wall. It is possible that the hernia begins along the foramina. This may be true especially when the foramina transmit anomalous vessels or branches of the deep hypogastric. The presence or development from the preperitoneal fat of small lipomata which force their way through these foramina or through tears in the transversalis fascia may be an etiological factor. In addition the possibility of anomalous development of the fascia in the semilunar line of Spigelius. A Lo z Rost MD

Block W Report on 20 199 Collected Operations for Inguinal Hernia (Ben it b S mml on 99 L te bru b perst ) I h f kl Ch 1933 l 607

From 19 clinics with 49 surgeons 20 199 operation for inguinal hernia were collected. Of these 19 318 (95 per cent) were performed for primary hernia and 81 (4 per cent) for recurrent hernia. Of 604 patients operated upon for primary hernia by 94 surgeons in 20 clinics 296 (49 per cent) were found to have a recurrence when they were examined. The incidence of recurrence after operation for inguinal hernia is estimated statistically at from 3 to 35 per cent. About 91 per cent of the hernia in the cases reviewed were indirect and 9 per cent were direct. Strangulated hernia constituted 9 per cent of the total number. The Bassini method was used most frequently for both primary and recurrent hernia being employed in over two thirds of the cases. The incidence of recurrence after this operation is estimated at 42 per

cent. The incidence of recurrence after the Kocher operation was relatively low (32 per cent) but on account of its dangers this procedure is not generally advisable. The incidence of recurrence after other operations was as follows: Girard's operation 57 per cent; Hackenbruch's operation 95 per cent; Woelfler's operation 133 per cent; and Jaure's operation 30 per cent. The less frequently performed operations are also mentioned. No relation was found between the incidence of recurrence and the number of surgeons in the various clinics.

Local anesthesia was preferred in 4 clinics; general anesthesia in 14; spinal anesthesia in 1 and avertin basal narcosis in 4. The time course of recurrence falls steeply within the first year and then quickly flattens out. More than a third of the recurrences in the cases reviewed appeared after two years. The chief causes of recurrence are constitutional factors, wound disturbances and pulmonary complications. The number of recurrences due to these causes and their significance are discussed.

In two-thirds of the clinics the patients were allowed to get up in the second week after the operation and in one-half they were allowed to return to work after approximately four weeks. In 612 per cent of all cases the site of recurrence was in the inner angle of the scar in 364 per cent at the outer angle and in 17 per cent in the middle. In 206 per cent the site was not recorded. The incidence of recurrence in these sites after the Bassini operation was about the same. Persons engaged in heavy manual labor are 6 times more prone to develop recurrences than sedentary workers. The suture material used, whether catgut or non-absorbable material (silk, linen) is of no importance in the development of recurrences. In the cases of non-recurrent hernia reviewed the operative mortality was 05 per cent and in case of incarcerated hernia 39 per cent. Approximately every third death was due to strangulation of the hernia. R. Senck Z

Kirschner A Modified Bassini Operation for Inguinal Hernia Which Has Been Employed in 4500 Cases (Net 24500 14 11 end t Ab t de B h L st b h p t n) t h f kl Ch 931 j

It is known that the Bassini operation for inguinal hernia is followed by a definite though greatly varying incidence of recurrences in the cases of all surgeons. The recurrences are caused by an opening or bulging which occurs in the region of the posterior Bassini suture layer uniting the rectus internal oblique and transversalis muscles and the transversalis fascia to the inguinal ligament. Such openings may occur at the medial end of the suture close to the pubic tubercle or at the lateral end in the

region of the site of perforation of the spermatic cord. Bulgings may occur throughout the extent of the suture line. The danger of recurrence may therefore be diminished only by increasing the security of the posterior deep Bassini suture.

In a modification of the Bassini method used by Kirschner to strengthen the posterior deep suture the aponeurosis of the external oblique muscle is united with the deep Bassini suture without interposition of the cord and the cord is displaced into the subcutaneous tissue. By this procedure the site of perforation through the deep Bassini suture and the site of perforation through the aponeurosis of the external oblique muscle are superimposed so that the newly formed inguinal canal does not run in a straight line through the abdominal wall but pursues a somewhat backward and angulated course.

The author describes the steps of the operation in detail and shows them with drawings. His procedure does not vary greatly from the original Bassini operation; its purpose is merely to render the results more lasting. Recurrence is made more difficult in the medial corner by the absence of aponeurotic defects in the external inguinal ring; recurrence in the lateral corner by the repeated acute angulation of the spermatic cord and recurrence along the entire course of the suture line by the strengthening of the posterior layer by the superimposed external oblique aponeurosis.

NEUFERT (Z)

Cazzamali P. and Migliorini R. The Bacteriology of Acute Peritonitis (La batteriologia dell' peritonite acuta). *Arch. ital. di chir.* 1933 xxxi 573.

The authors present a chronological review of the more important literature on the bacteriology of acute peritonitis. In the early period all investigators tended to consider the bacillus coli as the sole cause of acute peritonitis. With improvement in bacteriological technique the importance of other organisms was established. Of special interest is the emphasis placed on the presence of the various anaerobes in these infections. The modern conception tends to combine the older views and to consider the presence of these multiple organisms not as a simple mixed infection but as an infection in which the several different bacteria have a symbiotic relationship.

After presenting the details of the technique employed the authors report the results of a study of eighty-one cases of acute peritonitis. Among these eighty-one cases there were nine sterile cases, ten cases with one organism, twelve with two organisms, seventeen with three organisms, fourteen with four organisms, seven with five organisms, and two with six organisms. The primary cause was appendicitis in sixty-four cases, perforated peptic ulcer in ten cases, cholecystitis in two cases, pneumoma in two cases, gonorrhea in two cases, and operation in one case.

The number of organisms present seemed to increase with the duration and diffusion of the infection. As a rule the aerobes appear before the anaerobes in the contamination of the peritoneum.

Frequently the organisms pass through an apparently sound appendiceal wall. The greatest number and variety of species were found in cases of perforation. Also in these cases the prognosis was poorest. In the authors' opinion it is impossible to determine the prognosis from the exudate alone and the presence of marked phagocytosis in the smears is not necessarily indicative of a good prognosis. A relative prognosis may be made on the basis of the relationship between the findings in the smears and cultures. Absence of bacteria in smears and cultures is favorable. Also favorable is the presence of organisms in the smears and their failure to grow in cultures. When organisms in the cultures show about the same numerical ratio as those in the smears, the prognosis is unfavorable. A reserved prognosis should be made when more organisms develop in the cultures than were seen in the smears and when new species appear in the cultures. It must be borne in mind that the bacillus coli is the least resistant in the peritoneal cavity and may even disappear while the streptococci persist.

A. LOUIS ROSE MD

#### CASIRO INTESTINAL TRACT

Twining F W. Chronic Hypertrophic Stenosis of the Pylorus in Adults. *B. J. Radiol.* 1933 i 644.

Twining reports three cases of chronic hypertrophic stenosis of the pylorus in adults and reviews eighty-nine cases collected from the literature. He emphasizes the roentgen findings and calls attention to the extreme difficulty of making a differential diagnosis from other stenoses of the pyloric region.

The lesion is essentially a pyloric muscular hypertrophy extending proximally into the antrum. There is a clear division between the hypertrophied pyloric sphincter and the hypertrophied prepyloric muscle and the pyloric sphincter functions independently of the rest of the mass.

Of the author's three cases only the third case presented roentgen findings sufficiently typical to suggest the nature of the condition. Of the ninety-two cases reviewed a correct pre-operative diagnosis was made in none and the possibility of chronic hypertrophic stenosis was considered in only three.

In Twining's first case the pre-operative diagnosis was prepyloric ulcer. Examination of the specimen following pylorotomy showed simple hypertrophy of the muscular coat. In the second case the pre-operative diagnosis was small pyloric carcinoma but examination of sections of the mass following its excision showed a typical chronic hypertrophic stenosis. In the third case the roentgen findings were very definite and as they resembled those in Case 1 which was examined six years previously, the author suggested the diagnosis of hypertrophic stenosis. However, because of the greater frequency of ulcer he expressed the opinion that the hypertrophy was probably caused by an ulcer. At operation no ulcer but typical hypertrophic stenosis was found.

In Twining's opinion the typical lesion of chronic hypertrophic stenosis of the pylorus in adults is characterized by: (1) the presence of a pyloric sphincter (2) a cleft between the sphincter and the antral hypertrophic mass (3) a narrow lumen of the mass (4) a rounded proximal end in the antrum resembling the uterine os and (5) retention of pockets of barium in the mucosal folds at the entrance to or just inside of the proximal orifice.

It is particularly difficult to differentiate this lesion from an ulcer with cicatricial stenosis or spasm and from a carcinomatous filling defect.

The author quotes Kirklm who reported eighty-one cases from the Mayo Clinic. Kirklm considers the duodenal shadow and the lengthening of the pyloric end of the stomach as almost pathognomonic of chronic hypertrophic stenosis.

In conclusion Twining says that chronic hypertrophic stenosis of the pylorus should be suspected in all cases in which roentgen examination shows a prepyloric filling defect with any of the features described.

E. R. CARLSON, M.D.

**Florentini A. Changes in the Ganglia of the Walls of the Stomach in Experimental Inflammatory Ulcerous Lesions of the Stomach** (Sull' influenza gangliariva della parete gastrica nelle infiammazioni ulcerose sperimentali dello stomaco). *Ann. d. Ch.* 1933, 20, 7.

Following a review of the Continental literature on ganglion-cell changes associated with gastro-intestinal disease from Jurgens's reports in 1830 to Rossi's report in 1929, the author describes the normal innervation of the stomach in detail and reports three series of experiments which he carried out on rabbits.

In the first series of experiments the pyloric artery was ligated and cut, the gastrobepatic ligament then severed on either side of the coronary artery and the coronary artery sectioned. In this way most of the vagus nerve branches in the cardia and a large number of the sympathetic fibers coming from the celiac plexus were blocked.

In the second series of experiments the pylorus and cardia were denervated by the same procedure but in addition from 0.2 to 1 c.c. of a broth culture of staphylococcus pyogenes albus and aureus obtained from a gastric ulcer in man was injected under the serosa of the gastric antrum. The incubation of the culture ranged from eight hours to three days. The dose of the culture medium depended on the weight of the animal.

The third series of experiments consisted only of the injection of living broth cultures under the serosa of the anterior gastric wall of the antrum.

In the first series of experiments the eight rabbits died respectively one, two, three, four, five, six, twenty-two and fifty-nine days after the operation. In the two rabbits which died within forty-eight hours after the operation macroscopic and microscopic examinations of the stomach revealed inflammatory degenerative changes which were most marked in

the pars pylorica. In the four rabbits which died between three and seven days after the operation they disclosed ulcerous lesions in addition to inflammatory and degenerative changes in the gastric mucosa. In the rabbit which died on the seventh day there was extensive gastric ulceration at the junction of the middle and distal thirds of the stomach near the lesser curvature. In the rabbits dying between the twenty-second and fifty-ninth days there were cicatricial scars but no active gastric lesions.

These findings are interpreted as evidence that severance of the nerve supply may lead early to true ulceration which heals if the animal survives. The nerve cells in this group of rabbits showed early peripheral displacement of the nucleus which otherwise was practically normal. In the rabbits with true gastric ulceration not yet undergone repair chromatolysis and marked lesions were seen. The necrobiotic changes were pyknotic hydrops, edema, nerve atrophy and degeneration. In the animals showing a tendency toward spontaneous repair the ganglion changes were still visible but less numerous and fewer cells showed marked involvement.

In the second series of experiments seven rabbits died respectively one, two, two, three, four, eighteen and thirty-two days after the operation and one rabbit was sacrificed after forty-four days. In the gastric walls of the two rabbits which died within forty-eight hours there were marked inflammatory changes but no true ulcerations. In the rabbits which died from two to three days later acute gastric ulcers were found. These were numerous but were superficial not extending to the muscularis mucosae. They were practically limited to the lesser curvature. In the rabbits which died from eighteen to thirty-two days after the operation there were no gastric ulcers but the mucosa was thickened because of an increase of interstitial connective tissue with vascular and perivascular sclerosis. In one rabbit adhesions were found. In the rabbit sacrificed on the forty-fourth day there were two contiguous ulcers which were fairly deep having their bases in the muscularis mucosae.

In this group of rabbits the ganglion cells showed more marked pathological changes than in the rabbits of the first group. The changes ranged from very moderate to severe. In the animals which died early without true gastric ulceration the nerve changes were slight but in the older animals they were extensive. In the three rabbits which died eighteen, thirty-two and forty-four days after the operation the nerve cells had practically degenerated being almost absent and showing marked chromatolysis, large Nissl bodies and atrophy.

From this series of experiments the author concludes that many of the nerve cells were irreparably damaged and ultimately completely destroyed whereas some of them which were more resistant survived and regained their normal structure.

In the third series of experiments six rabbits died respectively on the first, third, fifth, sixth, eighth and thirty-third days after the injection and one

rabbit was sacrificed on the thirty third day. Examination disclosed marked hyperemia, edema, leucocytic fibrinous exudation and hemorrhagic extravasation. Occasionally small collections of pus were found. The rabbit dying on the first day showed an extremely severe inflammation with numerous small superficial gastric ulcers extending below the submucosa and definitely related to the collections of pus. In the rabbit which died on the twenty second day and the rabbit which died on the thirty third day after the injection the inflammatory changes were less severe but examination showed connective tissue infiltration of fusiform or round young connective tissue interstitial cells. In the rabbits which died from one to seven days after the injection there were rather marked changes which usually paralleled in degree the inflammatory and degenerative changes in the ganglion cells. In the layers of the stomach which itself was only moderately involved or free from involvement the nerve cell changes were slight but where the ganglion cells were actively involved these changes were severe. In the rabbits which died twenty one and thirty three days after the injection necrotic or altered nerve cells were found near nerve ganglion cell which appeared normal. This was interpreted as evidence that the seriously injured nerve ganglion cells had been completely destroyed. The findings indicated that damage to nerve ganglion cells is slight when there is only moderate or no irritation in the gastric wall whereas with more severe inflammatory changes more marked nerve changes occur and when the gastric ulcerations reach the repair stage the nerve cells which can still be seen are normal or show little or no evidence of pathological change. This does not exclude the possibility that severely damaged ganglion cells may have gone on to complete destruction and disappearance.

The pathological findings in the first series of experiments may have been secondary to severance of the nerve fibers coming from the autonomic and sympathetic nervous systems but the author is convinced that the degree of nerve ganglion disease is consistently proportional to the pathological changes seen in the stomach wall. He concludes also that in all three groups of rabbits the changes of the ganglion nerve cells resulted from the early localization of the bacterial toxin in the nerve ganglia of the gastric wall. S. MCKE J. FOGELSO MD

Pozzani A. and Sforza L. Clinical and Roentgenological Results Obtained in the Treatment of Gastric and Duodenal Ulcer With Sodium Bicarbonate (Ricerche clinico sperimentali in fisiologia e fisiologia gastro-duodenale). *Atti del Congresso Internazionale di Medicina* 1933, 1, med. 569.

The authors report with roentgenograms 19 cases of gastric and duodenal ulcer which were treated by intravenous injections of sodium bicarbonate. Patients with complicating pyloric stenosis or other abdominal lesions did not respond to this therapy. The best results were obtained in cases of

uncomplicated ulcer of the stomach or duodenum. Clinical improvement occurred more quickly in the cases of gastric than in those of duodenal ulcer. All of the 19 patients showed marked improvement after the fifth to the twentieth injection. The untoward effects were insomnia which occurred despite relief of the epigastric pain and pruritus which developed in some cases after forty injections. In several cases re-examination with the roentgen after the fifteenth injection showed definite evidence of cure. In the others the treatment was continued up to 100 injections but the niche still persisted. As a clinical cure had been obtained in these cases in spite of the persistence of the niche the authors concluded that the niche was no longer evidence of ulceration and further treatment was unnecessary. SAMUEL J. FOGELSO MD

Ochsner A. Gage I. M. and Cutting R. A. The Influence of Hypertonic Salt Solutions on the Motility of Normal and of Obstructed Intestine. An Experimental Study. *A. S. S.* 1933, 74.

Hypertonic salt solutions have been used by many clinicians in the treatment of ileus. The authors report an investigation which they carried out on dogs to determine the relative efficacy of various hypertonic solutions.

In experiments on 63 dogs 128 observations were made on both normal intestine and intestine which had been obstructed for varying periods of time. In each instance lymphographic tracings of the gut were made so that the results obtained with the different hypertonic salt solutions would be comparable.

Of 21 cases in which a 20 per cent sodium chloride solution was injected intravenously intestinal activity was increased in 90.4 per cent, unchanged in 4.7 per cent and decreased in 4.7 per cent. The average increases in intestinal tone and in the amplitude of intestinal movements in the 19 with increased activity were 28.6 and 0.3 mm. respectively.

Fifty-five observations were made with regard to the effect of the intravenous administration of hypertonic Ringer's solution. The Ringer's solution was 20 times normal. In a group of experiments the observations were made with the abdomen open and in the other with the abdomen closed. Of the 43 cases in which they were made with the abdomen open an increase in intestinal activity was noted in 95.3 per cent and no change in 4.7 per cent. In no instance was there decrease in intestinal activity. The average increases in intestinal tone and in the amplitude of movement were 63.8 and 15.07 mm. respectively. The average duration of the increase in intestinal activity was eighteen minutes. Of the 18 cases in which the observations were made with the abdomen closed an increase in intestinal activity was noted in 94 per cent and no change in 5 per cent. In the cases of increased activity the average increase in tone and in amplitude were 3.1 and 0.9 mm. respectively. The average duration of the

increase in intestinal activity was seventeen and six tenths minutes

Of 20 cases in which observations were made with the abdomen closed following the intravenous administration of 20 times normal Hartmann's solution (modified Ringer's solution) there was an increase in intestinal activity in 95 per cent and no change in 5 per cent. The average increase in tone and amplitude in the cases with an increase of intestinal activity were 20 and 13.6 mm respectively. The average duration of the increase was twenty and two-tenths minutes.

It seems apparent from these findings that a hypertonic solution containing calcium and potassium in addition to sodium is more efficacious in stimulating intestinal activity than a hypertonic solution of sodium chloride alone. This conclusion is supported by the authors' clinical experience in the use of hypertonic solutions of sodium chloride alone and hypertonic Ringer's solution.

**Orr T G** The Action of Morphine on the Small Intestine and Its Clinical Application in the Treatment of Peritonitis and Intestinal Obstruction. J S 1933 835

The beneficial results claimed for the opium and morphine treatment of peritonitis have been based upon false conceptions of the action of morphine on the intestines. The author insists that there must be some other basis than the abolishment of intestinal activity. In experiments on dogs he has found that therapeutic doses of morphine sulphate definitely increase the bowel tone and the amplitude of the segmentation movements and initiate peristaltic waves. Large doses abolish the peristaltic action and sometimes decrease the tone, but do not affect the rhythmic contractions. Very large doses increase the amplitude of rhythmic segmentation movements. Clinical observations in cases in which ileostomy has been done and in cases of thin-walled hernia also indicate that morphine definitely stimulates the activity of the small bowel. The constipating effect of morphine is apparently due chiefly to its spastic effect on the sphincters.

Clinical application of the findings of these experiments is possible in acute peritonitis and intestinal obstruction in which overdistention of the small bowel is the most dreaded feature. As distention increases the circulation through the wall decreases and the bowel activity is correspondingly reduced. Thus toxic material is absorbed while gases are not absorbed. As morphine definitely stimulates the tone and rhythmic contractions of the bowel its use is logical to prevent overdistention. The author believes there is no foundation for the supposition that such stimulated bowel activity spreads infection. In addition to its action on the bowel morphine relieves pain and restlessness and thereby conserves the patient's strength. The small benefits can be obtained only by giving morphine in sufficient doses to produce continuous narcosis (every four hours). Danger signals

are respirations below twelve per minute and cyanosis.

In the treatment of any intra-abdominal condition associated with distention of the small bowel special attention should be paid also to the maintenance of water, chemical and metabolic balance. This calls for the administration of sodium chloride and water. As an aid especially in the prognosis, frequent auscultation of the abdomen should be done during morphine treatment of abdominal distention. The presence of gas and liquid in a distended bowel gives a characteristic tinkling sound during bowel activity which is totally different from the more muffled sounds of the normally functioning gut.

MAURICE MEYER M.D.

**Edman E R** Unusual Condition Simulating Acute Appendicitis—Vincent's Angina. J S 1933 74

To the long list of diseases which may be mistakenly diagnosed as acute appendicitis must be added one which is seldom thought of in terms of gastro-intestinal disturbance—Vincent's angina.

While this infection is usually confined to the mouth and throat, many systemic disturbances have been attributed to it. Cases of brain tumor, fatal streptococcus infection and gangrene in various parts of the body have been recorded.

Morris reports a case in which the infection invaded the entire alimentary canal and resulted in death, but the symptoms were not sufficient for a definite diagnosis of the gastro-intestinal condition. In the case reported by Edman the symptoms were so well defined as to point so unmistakably to acute appendicitis that appendectomy was done. The pathological report was chronic appendicitis. On the second day after operation the patient had a temperature of 102 degrees F, herpes labialis and a foul breath and complained of continuous pain in the abdomen. A smear taken from the mouth for suspected Vincent's angina showed numerous spirochetes and fusiform bacilli. The Vidal and Wassermann reactions were negative. Following the diagnosis of Vincent's angina 3 gm. of neosalvarsan were given intravenously. Immediate improvement was noted in both the throat and the abdominal symptoms and there was complete subsidence of the fever. By the tenth day after the operation all objective signs of Vincent's angina in the mouth and throat had cleared up.

The fact that acute infections often give rise to symptoms that may be mistaken for those of acute appendicitis, such as abdominal pain and vomiting, followed by a rise in the temperature, has been noted by others. Royster remarks that appendectomy has been done when the cause of the trouble was a chronic infection of the accessory sinuses of the nose and that suspected chronic appendicitis is often cleared up by tonsillectomy. However, when symptoms of acute appendicitis are associated with acute infection in another part of the body, the presence of appendicitis is probable.



A marked increase in the incidence of appendicitis has been noted after epidemics of influenza and other infectious diseases. Reuter reports a case in which acute appendicitis occurred soon after an attack of Vincent's angina. He states that such a sequel to angina has frequently been noted and that in such cases the appendicitis is often particularly severe and shows a definite tendency toward the development of gangrene. Reuter believes that the bacteria reached the appendix by ingestion rather than by way of the blood and lymph. A piece of necrotic tissue from the nasal lesions may have overloaded the stomach with bacteria which the hydrochloric acid was insufficient to destroy.

The physician who is confronted by a case of Vincent's angina with symptoms of acute appendicitis must make a prompt decision whether to operate or not. An unnecessary operation may well be regarded as the lesser evil.

For all cases of Vincent infection the author recommends treatment by intravenous injections of arsphenamin rather than by local applications in order to counteract any systemic infection that may be present. Under this treatment the angina and unless a true appendiceal lesion is present the abdominal symptoms usually clear up quickly. If the abdominal symptoms persist, immediate operation is indicated.

CH. ALZES BARON, M.D.

Aschoff L. The Appendic Its Attack and Its Relations to Faecal Stone. (D r app end i t is Anfall und i B ziehung z um K ist n) A l s B l k schr 933 i 1934

It is generally agreed that the complete picture of phlegmonous ulcerous appendicitis is produced only by bacteria. The enterococcus has been proved to be the principal excitant but in occasional cases pneumococci and colon bacilli may play a decisive role. The micro-organisms to which Aschoff ascribes the condition constitute the so-called appendiceal flora which in distinct contrast to the caecal flora grow under special conditions in the distal part of the appendix. Attacks of appendicitis are in some way related to the development of the bacterial flora of the appendix since in the absence of an appendiceal flora there is no acute or primary appendicitis.

Why do the appendiceal flora develop chiefly in the distal part of the appendix and why do they become pathogenic under certain conditions? The answers to these questions require a consideration of the abacterial conditions preceding the bacterially induced attack of appendicitis.

The first and most important factor is the physiological curvature of the distal part of the appendix by which the evacuation or self-cleansing of this part of the appendix is rendered more difficult. That this curvature plays the principal role in the development of appendicitis is evident from the fact that appendicitis begins especially frequently behind it whence it spreads distally in the mucous membrane

and the other parts of the wall and proximally more in the external layers without involving the mucous membrane. According to A. Hoff findings of the localization of the acute inflammation behind the curve is entirely independent of the distribution of the blood vessels. Aschoff calls attention to the fact that the appendiceal flora in the distal part are most abundant in appendices which show no regular filling and evacuation of faeces.

The question why the appendiceal flora so suddenly become pathogenic cannot yet be answered with certainty. Moreover it is still unknown whether stasis of secretion alone is sufficient to render the flora pathogenic or whether pathogenicity of the bacteria is preceded by some non detectable local disturbance of the circulation such as that assumed by Ricker. Such a hypothetical disturbance of the circulation would probably not lead to appendicitis unless the development of the appendiceal flora has been favored previously by the physiological curvature of the appendix. If the appendix has been damaged in its evacuating function by more or less severe attacks of inflammation the surest sign of the functional disturbance will be prolonged retention of the faeces even when the lumen of the appendix is preserved in its original state and the walls show little macroscopic change. The injury of the expulsion apparatus is followed by a slowing down of the process of evacuation but rarely causes recurring appendicitis. Because of the absence of more marked changes in the walls the condition cannot even be called chronic appendicitis unless perhaps there are disturbances of the neuromuscular apparatus which can be detected only with the aid of more precise methods than those usually employed. However masses of faeces held back too long may stimulate contractions which are painful. The combined symptoms then produce the clinical picture of chronic appendicitis.

The prolonged retention on of the column of faeces is not identical with stone. The characteristic stratification of stone formation begins not when the evacuation of faeces from the distal part of the appendix becomes difficult but only after it ceases completely. If in addition an incrustation of salts occurs a true faecal stone is formed. As a rule faecal stones originate as the result of severe attacks of inflammation of the appendix. Stratification on begins when a nucleus is formed by sufficient thickening of the faecal mass. The thicker and harder the stone the more distinct the stratification.

The bacterial content of faecal stones differs from that of ordinary soft faeces. While soft faeces contain an abundant admixture of bacteria if the nature of the caecal flora faecal stones contain micro-organisms which are typical of the appendiceal flora. In the larger stones the alternation between layers rich in bacteria and layers relatively free from bacteria is very striking. As yet this phenomenon has not been explained.

Aschoff is of the opinion that faecal stones do not exert a mechanically destructive effect on the mu-

cous membrane since in cross sections of the appendix he found the mucous membrane completely preserved at the level of the stone even in cases of large stones and the most severe inflammation was distal to the stone in the part of the mucous membrane which was not mechanically compressed.

From his observations Aschoff concludes that the stone itself does not cause the attack of appendicitis; it merely favors pathogenicity of the appendiceal flora in some manner as yet unknown. He believes that every stasis of secretion in the distal part of the appendix whether it is caused by the physiological curvature, adhesions, or a fecal stone favors pathogenicity of the appendiceal bacteria. **NEUBERT (Z)**

**Peterson L.** Inflammatory Strictures of the Rectum and Lymphogranuloma Inguinale (Fat zündliche Le end Ma t d ms nd Lym phogranuloma ingu al) *F k Lk salisk h d l* 1933 LXX 545

The cause of rectal stricture is not always carcinoma. In addition to tumor many other causes must be considered particularly when the condition follows an inflammatory process such as dysentery, gonorrhea, syphilis, or tuberculosis. During the world war and immediately afterward a new infectious disease which produced elephantiasis like changes in the external genitalia—lymphogranuloma inguinale—is observed particularly in seaports. Investigations by Frei and his collaborators demonstrated that this condition is an infectious disease *in genere*. An extremely valuable aid to its recognition is the Frei intracutaneous reaction. The virus itself is as yet unknown.

The disease occurs in the most varied forms. In only from 30 to 40 per cent of cases is there a demonstrable swelling of the inguinal glands. With the aid of the Frei reaction various investigators have recognized also a latent form. The histological changes greatly resemble those of tuberculosis and have characteristic relations of the infiltrate to the blood vessels, stasis of the lymphatics, with lymph thrombi, a specific tendency toward reactive connective tissue formation and typical arteritic vascular changes. The Frei test is decisive in the differential diagnosis. It has shown also that elephantiasis genito-anorectalis belongs to the clinical picture of lymphogranuloma inguinale. Torpid ulcers and fibrous tumors which may simulate luetic condylomata or hemorrhoids may develop at the anus and run the course of a periproctitis even to fistulization. In the rectum the disease leads to stricture with all its serious sequelae. The course of the anorectal lymphatosis explains also the frequency of ulcerative and stercorite processes in the rectum, especially from 1 to 2 cm above the anal margin and about 6 cm above the phincter.

In from 80 to 85 per cent of all of the cases of elephantiasis genito-anorectalis which have been examined a positive lymphogranuloma inguinale reaction was obtained. In the vulvo-anorectal localization of the disease no form of therapy is

successful. Ordinary anti-luetic treatment has no effect. Frei has found chemotherapy of value in certain cases. He recommends antimony. Others report successful results from tuberculin treatment. Roentgen treatment is useless. The treatment of inflammatory rectal strictures resulting from lymphogranuloma inguinale is very unsatisfactory. The Kiel Clinic (Anschuetz) reports that of thirteen patients treated five died. Of the remaining eight five were cured, but of these five two had persisting strictures and the others were discharged with colostomies. Conservative treatment—with bougies or the thermocautery or by diathermy—is given as long as possible. In severe cases colostomy is the only procedure possible.

The author reports six cases with the symptoms described. Anti-luetic treatment and roentgen irradiation were tried but had no effect. In two cases there were severe strictures. Resection of the rectum by Hochenegg's method was attempted and for the most part was successful. In the other cases a preliminary colostomy was done and after the second stage of the operation the peripheral portion of the colon was removed. The patient was left with a persistent diarrhoea. The author recommends palliative treatment as long as possible, mild laxative instillations, the use of bougies in beginning strictures and dilatation with laminaria. Only after healing of the inflammatory and ulcerative processes which sometimes takes years may closure of the colostomy and the restoration of anal function be considered. Because of scar formation the technique of the operation is very difficult. **GERIACH (Z)**

#### LIVER GALL BLADDER PANCREAS AND SPLEEN

**Edlington G. H.** Surgical Diseases of the Biliary Tracts. An Analysis of 200 Cases. *Cl g W J* 1933 LX 53

Edlington reports on 200 consecutive cases in which he operated for symptoms suggestive of gall bladder disease. The series included 162 cases of gall stones, 25 cases of cholecystitis without stones and 13 cases of other lesions. The 206 operations performed in the 200 cases included 104 cholecystostomies, 95 cholecystectomies, 4 cholecystogastrostomies, 1 cholecystoduodenostomy and 5 exploratory operations. There were 4 deaths, a mortality of 12 per cent. Of the 20 male patients 11 (30.2 per cent) died.

Of the 71 cases in which cholecystitis was a marked feature, gall stones were present in only 4. In this connection Edlington says: "It is doubtful whether cholecystitis takes its share in the production of gall stones, but it is only to be expected that the presence of stones may excite or exaggerate inflammation of the gall bladder."

Edlington thinks that the danger of recurrence of gall bladder trouble after drainage operations is apt to be exaggerated. In some cases cholecystectomy does not provide the drainage which is necessary.

Another objection to this operation is the anatomical distortion of the parts which may be a source of difficulty in the event of a secondary operation on the ducts. However Edington concludes that when a large number of cases are considered the favorable late results of excision must weigh heavily with the surgeon.

FRED GARBER, M.D.

FARL GARDEN M.D.

Stone H B and Owings J C The Acute Gall  
Bladder as a Surgical Emergency 1 S 2  
1933 Vol 1 60

The authors are convinced that prompt operation is the treatment of choice in all types of acute gall bladder disease. They cite nine cases showing the dangers of delay of surgery in acute cholecystitis and the likelihood of secondary flare ups after subsidence of the initial acute lesion under conservative therapy. They believe that in most cases the operation of choice is cholecystectomy.

STATE II ME THER M D

Abell J. Wandering Spleen with Torsion of the  
Pedicle. J. S. 1933. C. U. 722

The author has collected from the literature ninety five cases of wandering spleen with torsion of the pedicle. To these he add two of his own. The fact that 14.3 per cent of the patients were under twenty years of age supports the theory that a congenital elongation of the splenic pedicle is essential for the occurrence of the condition. The fact that only 10 per cent of the subjects were over forty years of age suggests that relaxation of the abdominal wall and the ligaments which support the abdominal viscera is not a cause of major importance. The majority of the patients were women but pregnancy did not seem to be a factor of major importance. Splenomegaly itself is not of prime importance but in association with malaria seems to be of some significance.

The majority of the patients gave a history antedating the torsion which might justly be ascribed to the splenic enlargement. In some of the cases there were digestive disturbances due to pressure and traction on the viscera. A small number of the patients had had colics of a mild type due presumably to previous partial twists of the pedicle. In thirty-four cases the first symptoms had been noted in the present illness: pain, nausea, vomiting and an increase in the pulse temperature and leucocytocount a usually present. A mass was evident in most of the cases but in seven was found in only the left upper quadrant. Not infrequently a tumor was palpated in the pelvis. Normal blood counts were reported in a rather surprisingly large number of cases.

Primary splenectomy was performed in eighty three cases. Detorsion and replacement were done occasionally but the author argues against them. The surgical mortality was 17.6 per cent. In many cases thrombosis of the splenic artery or veins had occurred and in some the spleen contained blood clots. In one case the spleen contained a cyst due to

necrosis from which 4 liters of sterile pus were removed. In eight cases the tail of the pancreas was involved in the process and in seven there was intestinal obstruction of varying degree in the large or small bowel. ST. LEON MENTZER, M.D.

ST LEF H MENTZER M D

## MISCELLANEOUS

Amel ne A The Informat on Obtained by Per  
cussion of th Abd m n in Intestinal Infa c  
tion (S l en m ts lounns p l pe cu  
n de labdom d s l f t t i l)  
P sse mtd I 933 1 1729

In two cases the area of flatness was quite limited but in one case it extended over nearly the entire abdomen. It seemed to correspond definitely to the infarcted loops. ALBERT F. DE G. O. T. M.D.

Koster H and Kasman L P Pylephlebitis 44  
S 1 933 49

In the period from July 1, 1928 to December 31, 1931 the authors encountered 4 cases of pylephlebitis at operation. Three occurred in a series of 102 cases of acute appendicitis and 1 in a series of 112 cases of acute cholecystitis.

The most common single cause of pyelophlebitis is acute appendicitis but infection in any organ with a venous return emptying into the portal vein may produce the complication. Of 46 cases of pyelophlebitis collected by Brown acute appendicitis was the cause in 42 per cent. Pyelophlebitis usually results in the development of suppuration within the liver with multiple abscess formation in close relationship to the portal vein and its branches. Occasionally a single abscess may occur. In 1928 Dick demonstrated that dye injected into the various tributaries of the portal vein is usually carried to fairly constant and definite areas in the liver. This finding may explain the almost invariable location of a solitary abscess in the right lobe of the liver when the primary infective focus is in the appendiceal caecum.

One of the most characteristic signs of pleurisy is a change in the temperature. The temperature changes may be slight or marked and give no indication of the number or the distribution of the suppurative foci in the lung. Chills accompanied by a rapid rise in the temperature occurring preoperatively or postoperatively in the course of an acute inflammatory process in an intra-abdominal organ with drainage into the portal system must always be considered significant. The chill does not always recur. Dull pain in the right upper quadrant of the abdomen is an inconstant symptom. The leukocyte and differential counts are of no great diagnostic significance. Tenderness is almost invariably present but may be so slight as to be considered negligible.

Jaundice is almost always present and is one of the early signs of involvement of the liver. When it appears preoperatively it may be misleading as it tends to draw attention away from a causative lesion such as an inflamed appendix and direct it to the biliary passages when involvement of the latter is only the terminal complication. When jaundice appears as a postoperative complication of appendicitis the possibility of a complicating pylephlebitis should be given consideration. A slight icteric tint to the sclera may appear even before the chill and fever.

In all of the 4 cases reported by the authors enlargement of the spleen was noted clinically. Blood cultures are usually negative.

The treatment is primarily prophylactic. The authors state that if all cases of acute appendicitis were recognized and operated upon early there would be fewer cases of pylephlebitis. If frank suppurative phlebitis of the vessels of the mesoappendix is evident at operation ligation or excision of the ileocolic vein should be done before the appendectomy. When the infection has already spread beyond the confines of the ileocolic vein and pylephlebitis has developed operative intervention is of no value unless a well defined abscess has formed in which case incision and drainage should be done.

Ligation of the portal vein itself is of little value because by the time pylephlebitis is recognized clinically there is always infection of the intrahepatic portion of the portal vein which remain as a septic focus for further dissemination within the liver.

The authors 4 cases are reported in detail.

ARTHUR S. W. TOLROFF, M.D.

Truesdale, F. F. The Origin and Course of Infection in Subphrenic Abscess. *Ann. Surg.* 1933, 61: 846.

The author believes that the principal source of infection in subphrenic abscess are acute peptic ulcer, biliary disease, and appendicitis in the order named. The infection spreads by way of the lymphatics. Involvement of the diaphragm is favored by the distribution of the lymphatics in the abdominal cavity and the liver. The lymphatic flow from the entire colon and other abdominal viscera drains directly into the liver and thence to the terminal part of the esophagus into the falciform ligament along the vena cava and through the diaphragm to the inferior deep cervical nodes. As these lymphatic systems connect also with the lymphatics on the pleural surface of the diaphragm, pleurisy is a possible cause of subdiaphragmatic abscess.

STANLEY H. METZ, M.D.

# GYNECOLOGY

## UTERUS

Shaw W F The Treatment of Prolapsus Uteri  
with Special Reference to the Manchester  
Operation of Colporrhaphy *Am J Obst & G*  
G 1933 xx 1 667

In Manchester for a continuous period of forty five years an operation of one type always with the same general principles though with varying minor technical details has been performed by a large number of gynecologists on all patients with pro lapse of the uterus irrespective of their age social position or parity. Its results allow more nearly a guarantee of cure to be given the patient beforehand than those of any other operation in surgery.

In 1888 Donald of Manchester commenced to treat cases of prolapse of the uterus by the combined operation of anterior and posterior colporrhaphy and amputation of the cervix. The author gives a detailed description of the Donald operation with minor modifications made by himself.

Of 549 cases in which this operation was performed 96.35 per cent were cured. In the six years included in the author's investigation there were only 9 deaths in 2152 operations—1 from pneumonia 1 from heart failure 1 from embolism 1 from septic absorption from a piece of gauze retained in the uterus 1 from pyelitis due to performance of the operation too soon after an attack of cystitis and 4 from an unrecorded cause.

Of 56 patients who complained of chronic aching pain 49 (87.5 per cent) were cured and of 17 who complained of incontinence of urine on straining 14 were cured. Only 27 bore children after the operation but of this number only 5 showed any signs of recurrence.

Of 171 patients over fifty years of age 167 (97.7 per cent) were cured. In the 4 others the recurrences were very slight.

Some surgeons have so little faith in the repair that they always combine it with some form of abdominal fixation of the uterus. However when there is a reasonable amount of pelvic muscle and the colporrhaphy is performed properly this is never necessary.

The perineum should be kept as dry as possible. At the end of the operation the vagina is packed with gauze soaked in a bismuth iodoform and paraffin mixture. This gauze is removed the following morning. On the fifth day a vaginal douche of boracic lotion is given through a glass catheter to wash away blood clots. The bowels are moved on the third day with liquid paraffin and castor oil. Even with the greatest care there is considerable risk of infection of the bladder whenever a catheter

is passed. This is true especially after the operation described as the bladder is handled and displaced and some of its blood supply is damaged.

The chief postoperative complication is hemorrhage occurring about a week after the operation. However if proper care is taken serious bleeding is very rare. In the majority of cases the hemorrhage comes from the cervix and is due to a low degree of sepsis which has prevented the healing of this tissue so that when the catgut sutures give way the cervical incision gapes and bleeds.

In the cases reviewed occlusion of the cervix was found once. Vaginal adhesions are rare.

EDWARD L. COKKILL, M.D.

Salini A The Pre Operative and Postoperative Content of Indican in the Blood in Cases of Tumor of the Uterus and Ovaries (Sull'indicina nel sangue nei tumori dell'utero e delle ovaie prima e dopo l'operazione) *Rivista di Ginecologia* 1933 xv 374

The author reports his observations on the blood indican in thirty-five cases of tumors of the uterus and ovaries. Twenty-five of the women had uterine fibroids, nine had ovarian cysts and one had a uterine fibroid and a para-ovarian cyst.

The indican content of the blood was determined by the Rosenberg-Lolles method before operation and several days after operation and on the day the patient was discharged from the hospital.

To determine the normal content of indican in the blood Salvini reviewed the literature. The physiological content reported by various investigators ranged from 0.40 mgm (Cabanni) to 1.8 mgm (Klein) per mille. The author accepted the average of these values from 1 to 1.3 mgm per mille as the normal value.

In the cases of the twenty-five women with fibroids the blood indican before operation varied from 1 to 2.48 mgm per mille. In the majority it was well above the accepted normal. On the second or third day after the operation it showed a constant drop except in cases complicated by kidney disease (evidenced by albuminuria) or a febrile postoperative course. In the latter it was always found increased and returned toward normal only after disappearance of the albumin from the urine and abatement of the fever.

In the cases of the nine women with ovarian cysts the blood indican before operation varied from 1.40 to 2.15 mgm. Again following operation it showed an appreciable drop except in cases complicated by kidney disease or fever.

In the case of the patient with a uterine fibroid and a para-ovarian cyst the variations in the blood indican were the same as in the other cases.

The author ascribes the pre operative hypernicanemia to the absorption of toxins from tumors of the uterus and ovaries. To prove the occurrence of such toxicity he cites the heart condition associated with myomata (Kooersberg Doane and Henkle) the arterial and venous hypertension in cases of myoma (Virto Ferroni and others) and the action of fluids from ovarian cysts injected into the peritoneal cavity (Auche and Chavannaz).

The elevation of the blood indican in cases complicated by kidney disease is regarded by Salvini as a sign of renal insufficiency and attributed by him to deficient elimination rather than to overproduction.

GEORGE C. FINOLA M.D.

Miller H. E. and Tyrone G. H. A Survey of a Series of Myomectomies with a Follow Up  
1m J Ob & G 933 15

The author review 128 myomectomies. Of the 57 patients who had menorrhagia before the operation 91 per cent report that the duration character and amount of the menstrual flow have been entirely normal since the operation. Dysmenorrhœa occurred in 52 per cent of the cases but persisted after the operation in only 53 per cent. There has been no report of postoperative pain or pelvic discomfort since the operation.

The number of fibroids removed ranged from one large subperitoneal or interstitial tumor to 15 growths representing all types. In cases of single growths it is practically always possible to remove the growth and restore normal function of the uterus even when the tumor involves a large portion of the uterine corpus or protrude into the uterine cavity. When the number and position of the growths necessitate multiple extensive incisions and when marked mutilation of the musculature would result from enucleation of the growths hysterectomy is preferable to myomectomy.

Degenerative changes were present in 32 per cent of the cases reviewed. In 3 the pathologist found arily sarcomatous degeneration in the removed fibroid.

Of the 69 patients under thirty eight years of age 41 were sterile at the time of the operation and 28 had given birth to from 1 to 3 infants. Twenty-one of these 69 later had pregnancies which were probably rendered possible by the myomectomy.

The total number of myomectomies performed during pregnancy was 7. Myomectomy was done during the course of pregnancy only when an acute abdominal condition had arisen from degeneration in a growth as the result of strangulation of the circulation embolism or twisting of the pedicle. The technical difficulties of myomectomy are greatly increased in pregnancy particularly if the growths are situated near or over the placental implantation. In 5 (approximately 71 per cent) of the 7 cases cited the pregnancy continued to term after the operation.

The number of patients who returned for treatment after the myomectomy was 8. Five were

found to have a recurrence of menorrhagia resulting from generalized sclerosis of the uterine musculature. Of these 3 were treated by hysterectomy and 5 by radium irradiation. The time between the myomectomy and the recurrence of symptoms requiring treatment ranged from three to ten years.

In the entire series of 128 cases there was only 1 death the operative mortality being therefore 0.7 per cent. The death was due to acute dilatation of the stomach.

Acute obstruction of the bowel occurred in 1.5 per cent of the cases during the patient's stay in the hospital and subsequently as a complication of pregnancy in 0.75 per cent. Chronic partial obstruction occurred in 0.75 per cent.

EDWARD L. CORNELL M.D.

## ADNEXAL AND PERIUTERINE CONDITIONS

Cheval M. Mayer L. Dejardin L. and Mayer C. Experimental and Clinical Researches on the Use of Ovarian and Uterine Grafts (Recherches expérimentales et cliniques sur l'utérus et les greffes d'ovaire et d'utérus) B. elles 1933 11 1358

The authors carried out experiments on twenty six female dogs to determine the fate of autogenous ovarian grafts after (1) bilateral oophorectomy with conservation of the uterus (2) bilateral oophorectomy and hysterectomy and (3) bilateral oophorectomy and hysterectomy followed by the implantation of autogenous uterine grafts.

Small thin slices of ovarian cortex were implanted into the abdominal wall. The autogenous uterine grafts consisting largely of endometrium were introduced intramuscularly in another part of the abdominal wall. The animals were sacrificed and histological studies were made of the grafts fifteen, thirty and ninety days after the transplantation. In all but two cases the grafts healed without infection. From their findings the authors draw the following conclusions:

1. Intramuscular autogenous ovarian grafts in the female dog remain viable.

2. Autogenous ovarian grafts after hysterectomy develop follicular atresia. At the end of ninety days the primordial follicles show no signs of maturation. However the germinal epithelium develops epithelial tubes in which a number of newly formed ova are demonstrable.

3. Autogenous uterine grafts undergo cystic glandular degeneration of the endometrium but at the end of a month a number of normal uterine glands remain.

4. The vitality of autogenous ovarian grafts appears to be increased by the presence of autogenous uterine grafts. The follicles undergoing atresia show luteinization of the theca. After from thirty to ninety days numerous primordial follicles persist some of which show signs of maturation.

On the basis of their findings in animals the authors have performed ovarian and uterine grafting

on twenty six patients since October 1931. The procedures were as follows: autogenous ovarian grafting with preservation of the uterus sixteen cases; autogenous ovarian grafting after extirpation of the fundus of the uterus four cases; autogenous ovarian grafting after total or subtotal hysterectomy nine cases; and autogenous ovarian and uterine grafting after total hysterectomy nine cases.

The ovarian grafts consisted of minute pieces of the ovarian cortex. They were placed beneath the aponeurosis of the rectus abdominis or subcutaneously in the intermammary groove. Absolute hemostasis is essential to growth of the grafts.

The authors cite the case of a young girl who menstruated regularly four months after bilateral oophorectomy followed by the grafting of a small portion of autogenous ovarian cortex. In cases in which the uterus was removed the authors relied upon the subjective symptoms in judging the efficacy of the grafts. They report a case in which symptoms of the artificial menopause were noted for three months after operation and grafting but subsequently ceased. They attribute the symptomatic benefit to the endocrine activity of the graft which became attached. The uterine grafts healed without complications. One patient noted periodic subcutaneous swelling over the region of implantation of the graft. This was attributed to ovarian stimulation from the graft.

The authors draw the following conclusions:

1. When bilateral salpingo-oophorectomy must be performed the uterus should be preserved when possible and autogenous ovarian grafting should be done. Menstrual function can be preserved by this means in 70 per cent of cases.

2. Defundation of the uterus plus ovarian grafting should be performed whenever conservation of the entire uterus is impossible.

3. Autogenous ovarian grafting after total or subtotal hysterectomy and bilateral oophorectomy reduces menopausal symptoms.

4. Subcutaneous endometrial grafts are harmless in non infected cases. H. Old C. Mack M.D.

Moulounguet P. B. Ocq P. and Gibert P. Utero-Adnexal Tuberculosis (S. r. l. tub. r. l. o. annexiell.) G. J. & C. 1933, 11, 1, 46.

Moulounguet in discussing the clinical aspects of utero adnexal tuberculosis says that the initial lesions are probably acquired at an early age and like those in the lungs remain latent until for some reason they become activated. Genital tuberculosis is usually secondary to a primary focus in the lungs from which the organisms reach the genital tract by way of the blood stream. Genital lesions latent since early childhood become activated during the period of sexual activity, the reaction being favored by the sex act, menstruation, genital infections (especially gonorrhea), and pregnancy.

Three clinical varieties of pelvic tuberculosis are recognized: (1) tuberculosis of the cervix; (2) tuberculosis of the body of the uterus; and (3) tuberculosis

of the uterine adnexa. Adnexal tuberculosis is of the following four types: (1) tuberculous salpingitis with peritonitis and ascites; (2) tuberculous salpingitis with fibrocascous pelviperitonitis; (3) isolated salpingitis or oophoritis without peritoneal involvement; and (4) pelvic tuberculosis associated with tuberculosis in other parts of the body.

While sterility is common in women with pelvic tuberculosis, pregnancy is not impossible. Pregnancy is highly undesirable as it activates latent lesions and transmission of the infection to the fetus may occur although it is unusual. The diagnosis is extremely difficult. As a rule it is not made until the time of operation and often only after histological tissue examination. Approximately 8 per cent of all cases of salpingitis are due to tuberculosis.

Brocq discusses the surgical treatment of utero-adnexal tuberculosis. He states that the immediate and late mortality of this treatment ranges from 0 to 17 per cent. The operations performed in cases of adnexal tuberculosis with or without uterine involvement include simple exploratory laparotomy, partial removal of the adnexa and radical removal of the internal genitalia. Radical removal in cases of advanced tuberculosis has a high immediate mortality and morbidity and is often followed by late complications and death. Simple exploratory laparotomy and conservative operations have frequently resulted in cure, especially when they have been followed by appropriate medical treatment, irradiation or heliotherapy. When the tuberculous process is confined to the cervix, preliminary biopsy is essential for diagnosis. Amputation of the cervix total hysterectomy, curettage followed by thermocauterization or chemical cauterization and radium therapy have given good results. In cases of tuberculous endometritis diagnostic curettage may favor dissemination of the lesions. Therapeutic curettage is of doubtful value and hysterectomy offers the only chance for cure.

The most common pre-operative complications of chronic pelvic tuberculosis are acute exacerbation of the infection, secondary infection and spontaneous fistula formation. The postoperative complications aside from those immediately following the operation (shock, hemorrhage, intestinal obstruction) are due to damage to adjacent organs (bladder, intestines) with resulting fistula formation.

Gibert discusses the physiotherapy of utero-adnexal tuberculosis. This type of treatment includes natural and artificial heliotherapy and irradiation with the X-rays and radium. Gibert is of the opinion that when applied in advanced cases of pelvic tuberculosis after exploratory laparotomy, drainage of abscesses and cold abscesses, or partial surgical removal, physiotherapy will give results much superior to those of radical surgery. The probability of cure is increased if the physiotherapy is given both before and after surgical intervention. Irradiation with the ultraviolet rays or heliotherapy combined with climatic therapy should be tried first and roentgen therapy used when the other methods fail.

Treatment with the ultraviolet rays results in cure in from 40 to 50 per cent of cases, amelioration in from 30 to 35 per cent, and failure in from 15 to 20 per cent. Its action is quite superficial. For deep lesions roentgen therapy is indicated. The roentgen rays produce their effect not on the tubercle bacilli but on their habitat. They destroy the surrounding leucocytes and produce immunity through the liberation of immunogens. In addition they provoke an intense connective tissue reaction thereby walling off the organisms. Radium has a much smaller field of activity and is applicable only if the lesion is limited to the cervix. The best results are obtained when all available methods of physiotherapy are combined. **WILSON C. MACK, MD**

Schulze M. Carcinoma Cell Tumors of the Ovary  
*Am J Obst & Gynec* 1933 21: 127

Carcinoma cell tumors of the ovary are not so rare as was formerly supposed. The author reports four cases in detail.

These tumors are frequently mistaken for medullary carcinoma and even for sarcoma and endometrioma. Those not familiar with their characteristics. The pathological diagnosis is not very difficult if their characteristics are kept in mind.

Three main histological types are recognized: the follicular, the epitheliomatous, and the sarcomatous. Frequently two or all three of these types are found in different areas of the same growth.

The clinical diagnosis may be easy before puberty or after the menopause but is difficult during active sexual life. A careful study of the patient from the endocrine standpoint will prove of great aid in the pre-operative diagnosis as well as in the postoperative prognosis. There is definite evidence that the tumors elaborate the ovarian follicular hormone and possibly in some cases the lutein hormone also. It is probable that the follicular hormone tests will become as important in cases of granulosa-cell tumors of the ovary as the Aschheim-Zondek test in cases of chorionepithelioma.

Carcinoma cell tumors of the ovary are usually unilateral and comparatively benign. As a rule simple excision of the tumor is curative. Therefore it is most important to make a pre-operative or at least an operative diagnosis as this allows of conserving in the cases of young women. In the cases of menopausal women complete removal of the pelvic organs is preferable if the patient is a good risk. In the rare cases in which complete removal of the tumor is impossible postoperative radiotherapy will probably increase the chances for cure.

**WILSON C. MACK, MD**

## EXTERNAL GENITALIA

Stein A. Diseases of the Vulva. *Am J Surg* 1933 1

It is a subject subject to mycotic infections. The most frequent infections of this type are due to trichomonads. These infections are often associated with

pregnancy. Mycotic infections of the vulva have been classified by Le Blay as follows: (1) creamy vulvitis resembling oral thrush, (2) ulcerative vulvitis, (3) pseudoleucoplakic vulvitis, (4) eczematous vulvitis without an exudate, (5) pruritus with an inflammatory reaction and erosions due to scratching, and (6) vesicopustular cutaneous forms. In all of these types of mycotic vulvitis the diagnosis depends on demonstration of the organism in the lesions.

Tuberculosis of the vulva is rare but various forms of lupus have been described.

Lipschuetz has distinguished the following three types of acute ulcer of the vulva:

1. Gangrenous ulcers developing suddenly on the outer genitalia in association with burning pain, fever, and chills. The ulcers sometimes perforate the labia minora.

2. Venereal ulcers at the labia minora and in the vagina. These ulcers are sharply defined and not so deep as the gangrenous ulcers. Very painful to the touch and not accompanied by fever.

3. Miliar ulcers no larger than a pinhead. These always occur in combination with the venereal ulcers. *Bacillus crassus* is found in the smears in almost pure culture.

The chronic type of ulcer of the vulva, formerly known as esthiomene, is believed by Stein to be a manifestation of tertiary lues. Pathologically it shows changes characteristic of gumma. Histologically a syphiloma consists of a collection of round cells closely resembling the cells of inflammatory neoplasms with scanty blood vessels. The affected tissues like all gummata undergo processes of necrosis and cicatrization with contraction of scar tissue. According to Keher the factors involved in the production of esthiomene, a chronic ulcer of the vulva with secondary elephantiasis are:

1. Injury to the tissues especially the smaller arterial vessel due to a previous syphilitic infection.

2. Distention and stasis in the veins due chiefly to sexual disturbances and excesses.

3. Functional blocking of the regional lymph glands due to inflammation.

4. An ulceration on the tissues thus predisposed which may be due to any type of bacteria but is caused most often by the tubercle bacillus. Of secondary importance are gonococci, streptococci, staphylococci, and Durey's bacillus. The rarity of this condition is explained by the multiplicity of factors required for its development.

Joachimovits described a form of chronic ulcer of the vulva with elephantiasis. In Java he saw seventeen cases of this condition in two months. Some of the patients had demonstrable syphilis but there was no evidence to indicate that the vulvar lesion itself was of a syphilitic nature. The syrochets of a phylis were not found. The histological changes were not characteristic of syphilis and arsenamine treatment was without effect. The condition was a leucospotichrosis due to a symbiotic infection with spirochetes and fusiform bacilli.



In chronic hemorrhagic vulvitis five cases of which have been reported histological examination shows chronic inflammatory changes with hemorrhagic infarcts

Five cases of Paget's disease of the vulva have been reported in the literature

Primary venereal lesions—the typical chancre the soft chancre or ulcer molle and gonorrheal lesions—may occur on the vulva. They are usually found in the region of Bartholin's glands

Venereal granuloma ulcerating granuloma of the pudenda or granuloma inguinale when it occurs in women usually involves the vulva. The so called

Danovan bodies are now regarded as the etiological agent in granuloma inguinale and can be demonstrated in the lesions in practically every case. The most effective treatment is the intravenous administration of tartar emetic

Pruritus vulvæ occurs in many diseases of the vulva. For local treatment in the case of diabetes Stein advocates cleansing of the parts with oil and the application of an ointment with a lanolin base containing cocaine menthol and salicylic acid. Aqueous and alcoholic solutions should not be used.

Recent reports indicate that kraurosis is a later stage of leucoplakia. Tauszig is of the opinion that the underlying cause of leucoplakic vulvitis is loss of elasticity in the skin due partly to a deficiency of the ovarian hormone. Terruhn attributes both leucoplakia and kraurosis to an ovarian dysfunction which brings about trophic disturbances in the vulva through the sympathetic system.

Fibrosarcomata of the vulva are rare. Fibromata of the vulva usually originate in the subcutaneous connective tissue. Lipomata myxomata papillomata sweat gland tumors or hidradenomata and benign cystic tumors also occur in the vulva. Adenofibromata of the vulva containing uterine gland and stroma and adenomyomata of the vulva have been reported.

Vulvar sarcoma is rare but extremely malignant.

Carcinoma of the vulva is more frequent and of more clinical importance than sarcoma but is rare in comparison with carcinoma in the internal genital organs. It is extremely malignant although it occurs as a rule in older women. The primary tumor develops most frequently in the labia majora and minora and the clitoris. Metastases are usually limited to the regional and lumbar lymphatics. The glands in the groin are involved in most cases whereas the iliac and hypogastric glands are affected less frequently. Involvement of the adjacent skin and the mucosa of the external genitalia results in so called contact cancer. Involvement of the external inguinal gland represents the first stage involvement of the deep inguinal gland the second stage and involvement of the external iliac hypogastric and obturator glands the third stage of cancerous invasion.

Kentschler is of the opinion that in cancer of the vulva wide excision of the local growth with excision of the superficial and deep inguinal nodes on both

sides whether they are enlarged or not and supplementary radium and roentgen ray irradiation is the treatment of choice unless metastases have developed or the malignancy is of Grades 3 or 4. Under the latter conditions excision of the local growth followed by radium and roentgen ray irradiation over the site of the local growth and the lymphatic drainage is preferable.

Recent studies having indicated that leucoplakia is a precancerous lesion vulvectomy should be done in cases in which permanent leucoplakia or kraurotic changes have developed. CHARLES BARO, M.D.

Grabchenko, F. Cancer of the Vulva According to the Material of the Oncological Institute (Der k. b. d. Vulva n. h. d. M. t. n. a. l. n. d. O. l. o. g. i. s. c. h. e. n. I. n. s. t. i. t. u. t. s.) Z. 44 F. 1933 h. 33

The author estimates that carcinomata of the vulva constitute 1.47 per cent of all malignant tumors in women. Among 1,422 cases of malignant tumor of the female genital organs observed in a period of five years there were 61 cases of vulvar carcinoma. The condition was attributed to pruritus vulvæ in 53.28 per cent to leucorrhea in 9.83 per cent to condylomata in 8.19 per cent and to enzymes in 1.64 per cent. In 2.87 per cent of the cases no disease of any sort was present before the appearance of the tumor. In the author's opinion syphilis tuberculosis frequent childbirths and leucoplakia are not causes of vulvar carcinoma.

The lesion was located most frequently on the labia majora and less often on the clitoris labia minora urethra posterior commissure and Bartholin's glands.

Some of the lesions were cauliflower papillomata others diffusely infiltrating nodular tumors and others crater-like tumors. In 3 cases there were contact implantations. The author divides the cases into the following 4 groups: (1) movable tumors without metastases 14 cases (2) movable tumors with movable inguinal glands 29 cases (3) non-movable tumors with movable inguinal glands 4 cases and (4) non-movable tumors with non-movable inguinal glands 14 cases.

The cases of Groups 3 and 4 were looked upon as hopeless and consequently were not treated. Of the cases in the other group 3 were treated with radium 7 by operation with the knife and 31 by electroexcision. In the cases of the first group the inguinal glands were not removed. In 3 cases radium needles were inserted around the tumor. In only 1 of the 3 cases of precarcinomatosis of the urethra was there permanent healing. In the 2 others further treatment with surgical diathermy was necessary. One of the patients died of recurrence and metastases seven months after the treatment. The other developed a recurrence after ten years and again after three and a half years. The recurrences were treated by electroexcision. The patient has now been free from recurrence for one and a half years. One patient treated by operation has remained free from recurrence for five years and three months. Of 1

patients treated by surgical diathermy 1 died of sepsis and another one and a half years after the operation of apoplexy. Two patients have been free from recurrence for one year and four patients for one and a half, two and a half, three and five years respectively. One patient failed to report. All of the patients now alive are free from recurrence.

In Group 2 2 cases were treated with radium. In 1 of these the inguinal glands were removed but death resulted from recurrence at the end of eight months. In the other in which the glands were not removed death resulted from recurrences and metastases at the end of seven months. Six patients were treated surgically all with removal of the inguinal glands. Of these 1 died of sepsis 1 has not reported, 3 died of recurrence and metastases after from one to two and a half years, and 1 is living and free from recurrence after three and a half years. Eleven patients were treated by electro excision of the tumor and the glands. Of these 3 died after from six to twelve months, 3 after one and a half years and 1 after two and a half years, and 4 are alive and free from recurrence after one year, one and one half years, one and one half years and three years respectively. Of 10 cases of this group in which the glands were not removed death occurred after from one half to one and one half years in all.

The author prefers electro excision to other methods but believes that the method of treatment is of less importance than the time that the treatment is given.

IRMA PIPERS (C)

#### MISCELLANEOUS

Collip J B, Selye H, Anderson E M and Thomson D L. The Production of Oestrus The Relationship Between the Active Principles of the Placenta and Pregnancy Blood and Urine and Those of the Anterior Pituitary. *J Am M* 121 1933 553

The authors refer to the hormone present in human blood and urine during pregnancy and in the placenta as the anterior pituitary like hormone. They do not believe that it is identical with the ovary stimulating substance present in the anterior lobe of the pituitary gland. When administered to hypophysectomized immature rats very young suckling rats and guinea pigs this anterior pituitary like gonad stimulating substance causes merely the cal lutenization. The authors therefore conclude that when it produces enlargement of follicles and the formation of corpora lutea in the normal rat it does so by virtue of the presence of a complementary substance produced by the pituitary gland of the test animal.

ROWLAND M EKSTRAND M D

Brouha L. The Experimental Bases of the Problem of the Artificial Menopause (Les bases expérimentales du problème de la ménopause artificielle). *Gynéc et Obst* 1933 1 243

Animal experiments have shown beyond doubt that the oestrus cycle in mammals has two phases

the follicular phase and the lutein phase. The duration of these phases is variable. The follicular phase is determined by the ovarian follicular hormone and the lutein phase by the internal secretion of the corpus luteum. Surgical castration suppresses all anatomical and physiological alterations characteristic of the oestrus cycle. Irradiation may produce complete castration effects not distinguishable from those following bilateral salpingo oophorectomy. Partial suppression of ovarian function by irradiation may produce sterility but permits the continuation of follicular secretion so that the animal shows no castration symptoms. Surgical removal of as much as four fifths of the ovarian tissue does not produce castration phenomena as the remaining tissue regenerates and assures normal function. Removal of the corpus luteum shortens the oestrus cycle but does not suppress any sexual phenomena. According to the author's experimental findings but contrary to those of Watrin and Brabant hysterectomy does not affect ovarian function. Castration symptoms respond to specific treatment by ovarian grafting or the administration of the ovarian follicular hormone. When the graft is successful all anatomical and physiological characteristics of the oestrus cycle are restored. The duration of a graft depends upon its vitality.

The follicular hormone is the true female sex hormone. Its administration in suitable doses corrects the symptoms of castration. The corpus luteum is merely a gland of gestation its hormone is essential for completion of the normal cycle and the preparations for nidation of the fertilized ovum and its subsequent development. The administration of the corpus luteum hormone has no effect upon castration phenomena. In castrated primates the injection of the follicular hormone may produce menstruation.

HAROLD C MACK M D

Van Cauwenberghe A. Treatment of Symptoms of the Artificial Menopause (Traitement des troubles de la ménopause provoquée chez la femme). *Gynéc et Obst* 1933 xviii 266

Symptoms of the artificial menopause resulting from surgical castration are chiefly vasomotor or rheumatoid and usually respond well to endocrine treatment. When they are nervous or psychic their amelioration by treatment is problematical. Treatment with the ovarian follicular hormone gives good results under the following conditions:

- 1 When the treatment is begun as soon as possible after operation.
- 2 When the patient is not too young.
- 3 When it is possible to administer small doses at frequent (three day) intervals especially at the time corresponding to the usual period of menstruation.
- 4 When it is possible to administer the follicular intramuscularly rather than by mouth.
- 5 When physiotherapeutic and psychotherapeutic measures and tonic medicaments can be administered in conjunction with the oophorectomy.

Menopausal symptoms following irradiation are usually less severe than those of surgical castration if the irradiation is carefully carried out in fract anal doses. Under such circumstances endocrine products should not be given except in severe cases.

HAROLD C. M. M.D.

Hirsch H. and Hoffmann U. The Development of Genital and Peritoneal Tuberculosis in the Female in Primary Infection of the Retrograde Tract and the Importance of Infection (D. Ent. Lymphogenic Pathway of Genital and Peritoneal Tuberculosis). In: Klin. Wochenschr. 1933, 11, 375.

The authors discuss the problem of the origin of tuberculosis of the female genital organs in general and of the fallopian tubes in particular on the basis of animal experiments and examinations of infants who died as the result of infection of Hegar that tion against tuberculosis is relatively frequent in primary genital tuberculosis. The theory of Hegar that fact that to date no absolutely certain case of primary tuberculosis of the female genitalia has been reported and that it is a matter of controversy whether—with the exception of tuberculosis of the vulva—such a condition is possible.

- Secondary tuberculous infection of the female genitalia is of the following types:
1. Infection by continuity i.e. infection of previously normal tissue by direct contact with tuberculous tissue.
  2. Infection by contiguity or intracanalicular metastasis.
  3. Lymphogenous infection from a more or less testis.
  4. Hematogenous infection from a more or less tuberculous focus.

The majority of investigators believe that tuberculous infection of the female genitalia occurs most often by the hematogenous route, whereas Ghon, Kalka, Lahm, Franke, and others believe that the fallopian tubes become infected most frequently from the peritoneum. Nearly all investigators are of the opinion that the lymphogenous origin is of secondary importance, but on the basis of animal experiments Bakács has called attention to the possibility of a retrograde lymphogenous extension of tuberculosis and in view of the genital tract by this route.

The authors have attempted to supplement the experiments of Bakács by further experiments along the same lines. In accordance with the directions of Bakács the root of the mesentery was exposed by laparotomy in four adult female rabbits. On each a suspension of virulent lymph nodes and the posterior one of the mesenteric lymph nodes and the two other injection cauterized with a hot needle. In two other animals 0.3 c.c. of a similar suspension was injected in the region of the inguinal lymph nodes. The results showed the predominant importance of hematogenous extension of the infection. In all of the rabbits a hematogenous generalization of the tuberculous occurred. In six there was in addition a circumscribed peritoneal tuberculous with tubercles in the uterine serosa. Only the peritoneal tuberculous could be considered the point of origin of the serosal tuberculous. Isolated tubercles in the mucosa at the abdominal ostia of the fallopian tubes could be found in only two of the animals. According to the authors the tuberculous of the tubal mucosa in both of these animals was of hematogenous origin or due to entrance of the infection from the peritoneal cavity. There was no basis for the assumption of a lymphogenous or retrograde lymphogenous origin of the female genitalia may develop in this manner, not denied. The experiments therefore indicated that in the presence of serosal tuberculous changes in the peritoneal cavity the serosa of the genitalia and the mucosa of the fallopian tubes at the abdominal ostia may become involved by the peritoneal tuberculous. However, the authors emphasize the fact that great care is necessary in applying the findings of experiments made on animals to man.

To determine the origin of tuberculosis of the genitalia in the human female the authors examined the genitalia of eleven female infants who died as the result of tuberculous immunization in Luebeck. The findings in the individual cases are described in detail and summarized in tables. In all of the infants the tuberculous infection introduced in the food became generalized in the body. The primary infection occurred in the intestine. The ileocecal region was involved comparatively often. Very frequently there were multiple primary infections on a fact indicating that the infection was serous. In a few cases the mouth and pharynx were involved in addition to the bowel. In nine of the infants there was tuberculous of the genital organs (tubes, corpus uteri, cervical wall, ovaries, portio, vagina). In only five could involvement of the tubal mucosa be demonstrated. This is surprising as the tubal tuberculous infected in the majority of cases of genital tuberculous. Especially remarkable was the frequency of involvement of the connective tissue surrounding the genitalia either from the intestine or from the fallopian tubes. In eight of the infants the peritoneal tuberculous was associated with the parametrium, the mesosalpinx, or the mesovarium was involved a fact indicating the special importance of the hematogenous and lymphogenous routes of infection. A retrograde lymphogenous extension of tuberculous from a short distance and in the presence of disturbances of the lymphatic drainage is regarded as possible. The intestinal tuberculous of the female genitalia is secondary in importance to the development of tuberculous of the female genitalia from the peritoneum and hematogenous routes of the lymphogenous and hematogenous routes of spread of the infection.

The article contains five photomicrographs.  
KLAUS DIERKS (G)

Aldridge A H End Results in the Treatment of Pelvic Infection *Am J Obst Gynec* 1933  
xx 1 70

Adrenal disease tend to heal spontaneously but as there is no way of foretelling which cases will heal and which will require operation all cases should be given palliative treatment before operation is considered

Of a series of 1021 patients treated by palliative methods 48 per cent were either cured completely or rendered free from symptoms to such a degree that operation was unnecessary. In 32 per cent the symptoms and palpable pathological changes persisted after the treatment. In some of the latter operation was necessary. Nineteen and one tenth per cent of the patients treated were not re-examined after their discharge from the hospital.

Operation is recommended for the chronic stage of salpingitis if palliative treatment has failed to relieve the symptoms and for cases in which attacks causing disability tend to recur in spite of treatment.

The practice of operating to cure salpingitis in the acute stage of the infection is condemned. The author believes that nearly one half of the operations would be unnecessary if the cases were first treated by palliative measures. He states that operations in the acute stage are responsible for an unjustifiable mortality and morbidity unnecessarily destructive surgery and a high percentage of unsatisfactory end results.

Operations in the chronic stage even after recurrent attacks of infection yield end results which justify the greatest conservatism in the management of salpingitis. F & L Cor III MD

Lamarque P Temporary Sterilization by Irradiation (*La stérilisation temporaire par irradiation*) *Gyné t bsl* 1933 29

Sterilization by roentgen or radium irradiation has the advantage of eliminating surgical risk and the dangers attendant upon anesthesia and scar formation. For the patient who can tolerate irradiation it constitutes a simple harmless procedure. Roentgen irradiation appears to produce its effect directly upon the ovarian follicles. Radium seems to affect both the ovary and the endometrium the effect producing its effect more rapidly. Temporary sterilization by X ray irradiation was first suggested for cases of pulmonary tuberculosis. Since then its scope has been extended to include in the opinion of advocates of this method any possible indication for sterilization. The author believes that temporary sterilization does not impair the unaffected follicles or render them unfit to produce normal ova for subsequent pregnancy. While the results of present day irradiation methods are good they are far from perfect. Irradiation dosages for temporary or permanent sterilization are by no means fixed and equal in their biologic effect. Individual susceptibility to irradiation is extremely variable and is independent of the age of the patient. A dosage which will produce complete

amenorrhea in one patient will not affect another of the same age. Permanent castration is easily and readily obtained by the administration of a maximum single dose or by repeated irradiations. Temporary sterilization can be obtained in only from 45 to 50 per cent of cases by a single exposure when a second exposure is necessary the chances of producing permanent amenorrhea are great. Radium produces amenorrhea more promptly than the X rays although the effect in small doses is more transitory. Large doses produce permanent ovarian damage. Repeated small doses of radium irradiation are uncertain in their effects. The uncertainty of proper dosage for obtaining the effect desired is the first great disadvantage of the method. The duration of amenorrhea in patients sterilized temporarily has averaged ten months although in some cases it has ranged from thirty to eighty six months. The impossibility of predicting the duration of the amenorrheic period is the second great disadvantage of temporary irradiation castration.

Hirsh C Mack MD

Vassabau G and Guibau A Conservative Treatment in Gynecology (*La thérapie conservatrice en gynécologie*) *Cy t et bl* 1933  
x 1 330

The treatment of many gynecological disorders whether by radical or conservative surgical measures depends upon the attitude and experience of the surgeon. Recurrences of the disorder necessitating repeated surgical interventions have prompted many surgeons to perform radical pelvic operations routinely at the cost of precipitating the annoying and sometimes serious symptoms of the artificial menopause as well as depriving the woman of her child bearing capacity. In the hope of avoiding off the artificial menopause and saving the child bearing function other surgeons have used only conservative measures at the risk of incomplete treatment repeated surgical interventions and consequent economic loss.

Opinions as to the frequency of serious climacteric disturbances vary considerably. Some gynecologists regard these disturbances as negligible and infrequent whereas others consider them serious and almost constant consequences of castration.

The authors discuss in detail the technique of various operations designed to (1) prevent the menopause and maintain utero ovarian function for possible pregnancy and (2) prevent symptoms of the artificial menopause when radical surgery is necessary. These operations are the well known procedures of unilateral and bilateral salpingectomy and partial and complete hysterectomy with preservation of at least a part of one ovary *in situ* or grafted into the abdominal wall labia majora or elsewhere. The technique of transplanting the ovary with its attached pedicle to a uterine horn or the uterine fundus to preserve the child bearing function in cases in which the tubes and the other ovary have been removed is described. The authors

## INTERNATIONAL ABSTRACT OF SURGERY

stress the danger of atrophy of the ovary from damage to its blood supply in salpingectomy, meet the main blood supply of the ovary is derived from the ovarian branch of the uterine artery in the tubo-ovarian arcade. They therefore recommend the method of Villard and Labry (retrograde subserous salpingectomy) which aims to preserve the tubo-ovarian arcade. Normal ovarian function can be expected only when the ovary or a portion of it is preserved in its normal and its blood supply is intact. The amount of ovarian tissue preserved to prevent menopausal symptoms need not be large as little as one tenth of the entire ovary is sufficient. The authors are of the opinion that preservation of the uterus or of even a small part of it aids in maintaining the integrity of the retained ovary through some synergistic mechanism.

The results obtained by various surgeons with the various conservative operations are cited from the literature. In the reports of conservative operations the average mortality rate is given as 2.2 per cent which is lower than that following radical procedures and the operations are said to have prevented menopausal symptoms in from 74 to 90 per cent of the cases. However a cure resulted in an average of only 75 per cent of the cases whereas after radical operations the incidence of cure was 87 per cent. In from 5 to 10 per cent of the cases operated on conservatively subsequent surgical interventions were required.

The success of free and pedunculated grafts can not be stated definitely. Some surgeons (among them Cotte) claim that they are successful in 70 per cent of cases while d'Almeida believes that they merely relieve menopausal symptoms. The duration of vitality of a graft is usually considered to be very brief although Cotte and Tuffier report cases of activity of eight and twelve years respectively. As a rule evidence of secretory activity of the grafted ovary cannot be expected before the second or third month after the implantation.

In the choice of conservative or radical surgery it is necessary to take into account the age, health and social economic, and marital status of the patient as well as the type of lesion (inflammatory or non-inflammatory). The desires of the patient should be ascertained before operation but the type of operation to be performed should not be decided upon until the pelvic organs are inspected during laparotomy. Non-surgical treatment (diathermy, hydrotherapy, vacuumotherapy) has given such good results in pelvic infections that surgery is not justified until they have been faithfully and energetically employed and have failed to relieve the symptoms. In some cases of sclerocystic ovaries roentgen irradiation in small doses should be used in preference to surgery. The authors believe that conservative treatment both surgical and medical is supplanting radical treatment but they caution against its adoption in all cases without due regard to the indications.

HAROLD C. MACK, M.D.

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Kovács F. Some Unusual Cases of Ectopic Pregnancy (Ueber einige seltene Fälle von Ektopischer Schwangerschaft). *Zisch f Gb* 1933 vii 60

Not only the number of extra uterine pregnancies in general but also the number of unusual forms of ectopic pregnancy has definitely increased in recent years. Of the 2913 patients treated in the University Gynecological Clinic of Debrecen during the last year 57 (2.3 per cent) had an ectopic pregnancy. The author reports 4 unusual cases of ectopic pregnancy which were found among the 52 cases of this condition (16.5 per cent of the 57) which came in laparotomy.

In the first case reported by Kovács there was an intraligamentous pregnancy which had gone beyond term and was apparently the result of a primary ovarian pregnancy. The fetus was dead when the woman came to the clinic. The Aschheim Zondek reaction was negative. A chill of short duration and fever occurred once. Palpation of the cavity of the uterus following Hegar dilatation showed the uterus to be empty. At laparotomy a dead intraligamentous fetus was found. The ovary was absent but the fallopian tube was intact up to the extreme abdominal end. Removal of the fetal sac and of the placenta was strikingly easy and bloodless. This is explained by the fact that not only the fetus but also the chorionic villi had died off long before, as was evident from the negative Aschheim Zondek reaction.

From this case and a review of the literature the author draws the following conclusions:

Ectopic pregnancy may be carried without difficulty even after death of the fetus. In the differential diagnosis between ordinary intra uterine and extra uterine pregnancy the hardness of the cervix, the absence of a discharge and the often difficult palpatory evidence of the uterine body are distinguishing features. Fluoroscopic examination is of value only when filling of the uterus with a contrast medium is possible and this may be dangerous when an intra uterine pregnancy is present. The best procedure is digital palpation of the uterus.

In advanced ectopic pregnancy with recent death of the fetus should not be attacked surgically without definite indications until there is evidence that the placenta is also completely dead. That is until the Aschheim Zondek reaction is completely negative. Even when the fetus is alive operation should be delayed until both the fetus and the placenta are dead even though this may necessitate considerable delay of delivery. The operation will then be rendered easier because there will be less danger of hemorrhage and the possibility of a conservative

procedure will be increased. As a result of the sacrifice of the fetus (the viability of which is at best very doubtful) there is preserved to most younger women the possibility of later normal pregnancies.

In the second and third cases reported by the author there was a superficial ovarian pregnancy. Photomicrographs made in both cases show a distinct layer of ovarian stroma between the corpus luteum and the site of implantation of the ovum. In such cases rupture occurs very early because a part of the embryo is covered only by the amniotic membrane. If at this time none of the larger vessels is eroded the ovarian pregnancy escapes recognition, a fact explaining the scarcity of reports of this condition in the literature. Ovarian pregnancy may perhaps occur when the follicle ruptures before the ovum is sufficiently loosened in the cumulus oophorus to be washed out immediately. It is possible that the orgasm associated with coitus is a factor.

The fourth case reported by the author was a case of very early tubal pregnancy without any externally apparent changes in form. The patient was admitted to the hospital for severe internal hemorrhage and 1600 c.c. of fluid blood were found in the abdominal cavity. The source of the hemorrhage could not be discovered. The tubes and ovaries were absolutely free from changes. However, as the other abdominal organs could be eliminated as sources of the bleeding, both tubes were extirpated for the sake of safety. On section of the right tube the cause of the life threatening hemorrhage was found to be the implantation of an ovum between fourteen to twenty days old which had not yet produced changes in the tube.

H. SIBENTOFF (C)

Essen Müller E. Experience and Viewpoints With Regard to the Management of Placenta Praevia (Erfahrung und Gesichtspunkte zur Prävenablen nadeln). *4. Jahrbuch f. Gyn. u. St.* 1933 xiv 95

Essen Müller reviews his results in 245 cases of placenta praevia and his theories regarding this condition which are based on an experience of thirty five years. Of the cases reviewed only 18 per cent were those of primiparae (who constitute 46.6 per cent of the author's obstetrical patients), a fact showing the increase in the incidence of placenta praevia in multiparae. The cases are divided into 2 groups: (1) 158 cases of lateral placenta praevia the diagnosis made when both placenta and membranes can be palpated through the partially dilated cervix and (2) 87 cases of total placenta praevia the diagnosis made when only placental tissue can be palpated. The author rejects the differential terms

marginalis and centralis as he regards them as unnecessary from the clinical standpoint

The treatment of placenta prævia may be obstetrical or surgical. In obstetrical treatment the attempt is made to control the bleeding by compressing the placenta against the uterine wall until dilatation of the cervix will permit vaginal delivery. In the surgical treatment the labor is terminated immediately without local measures to control the bleeding. Obstetrical treatment includes such measures as vaginal tamponade, artificial rupture of the bag of waters, Braxton Hicks version and metemesis. Surgical treatment includes abdominal and vaginal cesarean section.

During his thirty five years of practice the author has gradually modified his view regarding the treatment of placenta prævia. During the first half of this period he employed Braxton Hicks version 3 times more often than he performed cesarean section, whereas during the last ten years he performed cesarean section 3 times more often than he used Braxton Hicks version. The frequency of vaginal delivery following spontaneous or artificial rupture of the membrane in cases of lateral placenta prævia remained constant throughout both periods.

Of the 245 cases reviewed delivery was effected by way of the vagina after artificial or spontaneous rupture of the membranes in 96 (39.3 per cent) with only 1 death a mortality of 1.04 per cent. The death was due to acute anemia. In 2 cases in which podalic version was done there were 5 deaths and in 6 cases of breech presentation in which a foot was pulled down through the cervix to control the bleeding there was 1 death the total mortality in these 78 cases being therefore 6 per cent. Abdominal cesarean section performed in 33 cases resulted in 1 death a mortality of 3.3 per cent and vaginal cesarean section performed in 33 cases resulted in 3 deaths a mortality of 9 per cent. The total mortality for both types of cesarean section was 6.06 per cent.

The fetal mortality in cases of vaginal delivery after spontaneous or artificial rupture of the membranes was 20.2 per cent in those in which Braxton Hicks version was done, 64.6 per cent and in those in which cesarean section was performed 17.9 per cent. If the death of non-viable infants born prematurely and weighing less than 2,000 gm and the intra uterine deaths occurring before the patients admission to the hospital are not included the infant mortality was 9.1 per cent in the cases of vaginal delivery following spontaneous or artificial rupture of the membranes, 53.8 per cent in those of Braxton Hicks version and 3.3 per cent in those in which cesarean section was done.

Following a discussion of the various methods of treating placenta prævia the author reviews his current practice. He has entirely abandoned the use of vaginal tamponade as he considers it not only ineffective for the control of hemorrhage but also dangerous through the introduction of infection. He has never employed the metemesis as he does

not consider it superior to Braxton Hicks version. He states that in cases of lateral placenta prævia with palpable membranes artificial rupture of the membranes usually proves adequate. In cases of total placenta prævia Braxton Hicks version offers a less favorable prognosis for both mother and child than cesarean section. However it is still indicated in cases of fetal death and cases in which delivery must be accomplished in the home. Abdominal cesarean section offers the best prognosis for both the mother and the child in properly selected cases but the author strongly condemns its use in all cases. Vaginal cesarean section should be done only in extremely urgent cases in which it offers the most rapid means of delivery and in cases in which infection contra indicates the abdominal operation.

The author emphasizes that no single method of treatment is applicable to all cases. The proper treatment in a specific case can be determined only after all circumstances including the degree of anemia, the state of the cervix and the condition of the fetus have been carefully considered. In every case in which placenta prævia is suspected the woman should be hospitalized.

ILLINOIS C. MACK, M.D.

**Paucot H. and Reeb V. The Surgical Treatment of Hemorrhages from Low Implantation of the Placenta.** (Le traitement chirurgical des hémorragies par implantation du placenta à la ségme inférieure). *Génit* 4061 1933 22 11 97.

The authors describe 4 anatomical varieties of low implantation of the placenta.

1 Secondary placenta prævia in which the major portion of the placenta is normally placed but several cotyledons encroach upon the lower uterine segment. This is the most common variety.

2 Primary or isthmic placenta prævia most always central in which the entire placenta occupies the uterine isthmus.

3 Isthmic cervical placenta prævia in which placental attachment at the isthmus encroaches upon the cervical canal extending sometimes to the external os.

4 Placenta prævia reflexa due to persistence of the fold of the chorion frondosum at the lower fetal pole.

Because of these topographical varieties of placental implantation and the varied pathological tissue changes which they produce and the diversity of their clinical features (such as the degree of secondary anemia, the permeability and length of the cervix, the presence of infection and the viability of the fetus) no single obstetrical or surgical procedure is applicable to all cases. The treatment must be adapted to the individual case. Complete effect is possible only when the patient is hospitalized on a fully-equipped obstetrical service. Two general types of treatment are possible.

1 Obstetrical treatment which includes artificial rupture of the membranes, the insertion of a dilatable bag, Braxton Hicks version, accouchement force and the procedure of DeLam.

2 Surgical treatment which includes the classical low and Porro caesarean sections and vaginal hysterotomy

Of the obstetricians cited by the authors 8.07 per cent employ obstetrical methods most frequently. In 724 cases treated by these methods the maternal mortality was 7.82 per cent, the maternal morbidity 34.06 per cent, and the fetal mortality 57 per cent. The mortality of the individual obstetrical methods was as follows: rupture of the membranes followed by spontaneous delivery 2.10 per cent, intra uterine insertion of a bag 9.47 per cent, Braxton Hicks version 13.72 per cent, version and extraction or forceps delivery after advanced dilatation of the cervix 13.57 per cent, and Delmas procedure 10.86 per cent. After rupture of the membranes the maternal morbidity was only 10 per cent as compared with approximately 30 per cent after other methods.

The fetal mortality after the individual obstetrical methods was as follows: rupture of the membranes followed by spontaneous delivery 34.5 per cent, intra uterine insertion of a bag 62.2 per cent, Braxton Hicks version 83.6 per cent, version and extraction or forceps delivery 61.75 per cent, and Delmas procedure 37.77 per cent.

Surgical methods employed in 477 cases by various obstetricians had a maternal mortality of 9.01 per cent, a maternal morbidity of 50.74 per cent, and a fetal mortality of 22.42 per cent. The mortality of individual surgical methods was as follows: low cervical caesarean section 4.33 per cent, classical caesarean section 12.65 per cent, Porro caesarean section or hysterectomy 20.31 per cent, and vaginal hysterotomy 15.38 per cent.

The fetal mortality following the various surgical procedures was: vaginal hysterotomy 39.13 per cent, classical caesarean section 6.26 per cent, low caesarean section 11.11 per cent, Porro caesarean section 77.42 per cent, and hysterectomy 25 per cent.

These statistics show that surgical method as a whole offers a better prognosis to the child at the expense of a slightly greater maternal mortality and morbidity.

In the less serious cases artificial rupture of the membranes had a maternal mortality of 2.4 per cent, whereas in the serious cases the maternal mortality following this treatment was 8.73 per cent and the fetal mortality 83 per cent. The authors believe that more frequent use of low caesarean section in serious cases would greatly reduce the morbidity and mortality as this procedure is the most effective and direct method of controlling hemorrhage. It is indicated when (1) severe hemorrhage necessitates immediate intervention, (2) delivery by the vaginal route is rendered dangerous or impossible by inherent abnormalities of the cervix, severe dystocia, or central implantation of the placenta, (3) obstetrical methods have failed, (4) a living child is greatly desired, and (5) infection is present. When uterine infection is severe the Porro

caesarean section or hysterectomy may be necessary.

When the blood pressure is normal spinal anesthesia is the anesthesia of choice because of its haemostatic effect in maintaining uterine contraction. In cases of hypotension ether anesthesia is to be preferred. Preoperative and postoperative blood transfusion is of importance in the combating of surgical shock and severe secondary anemia.

HAROLD C. MCKAY

**Avella P. Causes of the Intra Uterine Death of One Fetus in Twin Pregnancy (Causes d'un mort d'un des fœtus in utero dans la grossesse gemellaire). Gynecol et Obstet 1933 xxvii 473**

The author reports twelve cases of intra uterine death of one fetus in a twin pregnancy which was followed by continued normal development of the other fetus. These cases were observed at the Tarnier Clinic since 1926.

In the pathogenesis of the condition two groups of causes are involved: (1) general, (2) local. Among the former the author lists syphilis, gestational toxæmia, and placental infarcts. The local etiological factors include unfavorable nidation of one ovum, low implantation of one placenta, velamentous insertion of the umbilical cord, polyhydramnios favoring torsion of the umbilical cord, fetal malformations, and local syphilitic changes in the cord and placenta. Single-ovum twins are as often affected by these factors as double-ovum twins in spite of the fact that double ovum twins are four times more common. The author therefore believes that a single ovum twin pregnancy favors intra uterine death of one fetus.

The clinical signs of the intra uterine death of one fetus of a twin pregnancy are variable depending upon the stage of pregnancy at which the death occurs. Fetal death during the early weeks is usually not recognized, the diagnosis being made most frequently at delivery by the discovery of a fetus compressus on the membranes. When death occurs in the fourth month it may be suspected when a change in the rate of development of the uterus is noted. The uterus which at this time is usually of a size definitely greater than that indicated by the menstrual history ceases its development at this rate and remains stationary or enlarges at the same rate as in a single pregnancy. However, an exact diagnosis is impossible until a fetus compressus is discovered at delivery. After the fifth month the signs of fetal death are more pronounced: diminution of fetal movements, a change in the rate of development of the uterus, roentgenological evidence of fetal death (overlapping of the skull bones) and palpable crepitation of one fetal skull. Intra uterine death of the fetus in single pregnancies is usually followed by the onset of lactation. In the death of one fetus in a twin pregnancy lactation is inhibited by the living fetus or placenta. Absence of one set of fetal heart tones after two sets have been heard, absence of one placental souffle, and diminution of



the intensity of active fetal movements are other presumptive signs of the death of one of two fetuses. The most dependable evidence is the roentgen evidence.

The treatment as regards delivery should be expectant. When syphilis has been established as the cause, anti-syphilitic treatment may improve the prognosis for the living fetus and for future pregnancies. To determine the cause of death a detailed examination of the umbilical cord, placenta and dead fetus is essential. HAROLD C. MCKAY, M.D.

Goodall J. R. Nephritis and Pregnancy. *Am. J. Obst. & Gynec.* 1933, xx, 556.

The author states that the damage due to the toxicity of a pregnancy will depend on the intensity and duration of the condition on the one hand and the stability, sensitivity and reserve of the renal, hepatic, vascular, cerebral and glandular systems on the other.

The chief changes in the maternal organism in pregnancy must be looked upon as of endocrine origin.

The normal posterior pituitary lobe with a normal reserve responds normally to the stimulus of pregnancy, but when the stability of this lobe is not normal and its reserve is low, the demands of pregnancy are not met and the consequences are a hypotensive state with a low blood pressure, low uterine contractility and low muscle nerve irritability. Unstable glands in a state of hyperfunction and with a normal reserve before pregnancy may respond to the stimulus of pregnancy too vigorously with the consequent production of antidiuresis, a high blood pressure, albuminuria, nephropathies, liver necrosis and the symptoms accompanying the e states.

It has been definitely demonstrated that the pressor substance and the antidiuretic substance of the posterior lobe of the pituitary gland independently. When the pressor substance is dominant the blood pressure is high, the specific gravity of the urine is low, capillary contraction and internal changes in the capillaries occur and there is cardiovascular dysfunction which if prolonged and severe leads to permanent irreparable organic disease. When the antidiuretic substance is dominant the urine is scanty and filled with albumin and casts and edema and vascular changes occur with the development first of dysfunction and later of necrosis of the liver, eclampsia and coma.

Treatment to arrest the superproduction of a compound gland substance such as that of the pituitary gland is useless. Early functional derangement is of extreme importance. The patient should be relieved of worry, physical effort should be reduced to the minimum, elimination should be promoted by every means possible to free the body of the poisonous products of stimulated function. Nervous excitability should be controlled by sedatives. The cases of impending or active eclampsia the blood pressure should be reduced by emesection and the

cause of the overstimulation of the glands of internal secretion which is presumably the placenta should be removed as soon as is consistent with the patient's best interests. The metabolism should be reduced at first to a rate as low as possible consistent with the maintenance of life and after improvement has begun should be kept as low as is consistent with maintenance of the body weight. These requirements are best met by hospitalization with complete seclusion as possible and in severe cases a starvation and water free diet for three days followed by a diet free from carbohydrates and chlorides. The bowels should be acted by colonic lavage. Sedatives such as morphine, chloral sodium, amylal, nembutal and veronal should be used frequently but with discrimination to promote mental and bodily rest and allay nervous excitation. EDNA AND L. CORSEY, M.D.

Lazard E. M. An Analysis of 575 Cases of Eclampsia and Pre-eclampsia Treated by Intravenous Injections of Magnesium Sulphate. *Am. J. Obst. & Gynec.* 1933, x, 647.

This report is based on 371 cases of pre-eclampsia and 225 cases of convulsions developed in 21 (5.6 per cent) of which toxemia fell into 2 groups.

The cases of pre-eclampsia fall into 2 groups: (1) those in which the systolic blood pressure admitted to the hospital the systolic blood pressure was 150 or over, albuminuria was usually found and injections of magnesium sulphate were given as a prophylactic measure; and (2) those in which the patient was admitted to the hospital in the last two weeks of pregnancy in a frankly toxic condition and the intravenous injection of magnesium sulphate was the main feature of the treatment.

For many years the author has treated eclampsia conservatively. However, in the presence of active labor and cephalopelvic disproportion or some other urgent obstetrical indication such as abruptio placentae he has performed cesarean section notwithstanding the operative risk. In the cases of women with pre-eclampsia and those with eclampsia who have recovered from the convulsive attack but are not responding to treatment satisfactorily, cesarean section is at times indicated as an aid to the treatment of the toxemia.

The indications for the abdominal section in the author's cases were: abruptio placentae 4 cases; a previous section for toxemia 1 case; mechanical dystocia 2 cases; and persistent toxemia the convulsions recurred two days after they were controlled. In only 3 cases was the operation performed during the eclamptic attack. In 2 of these the indication was cephalopelvic dystocia and in 1 case continued toxemia with recurrent convulsions. In the other cases the operation was done from thirteen hours to thirteen days after control of the eclampsia.

There were 3 deaths in the cases in which cesarean section was done. The first was that of a woman

with abruptio placentæ who was operated upon under spinal anaesthesia forty eight hours after control of the convulsions. The second was that of a woman with chronic nephritis who was operated upon sixty hours after the eclamptic convulsions were controlled while she was comatose. The coma continued until death from uræmia five days after the operation. The third death was that of a woman who died twenty eight hours after operation and at autopsy was found to have had subapical hæmorrhages.

The routine used by the author at the present time is described in detail.

Because of the variety of the factors which may produce the eclamptic syndrome Lazard believes that it will be impossible to obtain a specific cure for eclampsia.

The objectives of treatment in cases of pre-eclampsia should be (1) to overcome the effects of the toxæmia by sedation and elimination (2) to relieve the demands made on the embarrassed excretories by proper regulation of the diet especially with regard to balancing of the fluid intake with the output and (3) to terminate the pregnancy as conservatively as possible before the onset of convulsions when the patient does not respond properly to treatment.

The chief objectives of treatment in eclampsia should be to control the convulsions and protect the patient against accidents during the convulsions and coma. Surgical termination of the pregnancy during the eclamptic attack is justified only in the cases of patients in labor who present an urgent obstetrical indication.

In the entire series of cases reviewed including both the pre-eclampsia and those of eclampsia the gross mortality was 5.9 per cent. In the cases of active eclampsia the gross mortality was 13.33 per cent and the corrected mortality 9.5 per cent.

EDWARD L. CORNELL, M.D.

#### Niel en M. Radium Treatment of Cancer of the Cervix During Pregnancy. *Acta Obst. et Gynec. Scand.* 1933, xii, 35.

Since cancer of the cervix occurs chiefly in women over forty years of age it is a rare complication of pregnancy. Its aetiology is identical in pregnancy as determined from various estimates is 0.005 per cent. While in most instances the lesion diagnosed during pregnancy is already hopelessly inoperable there is no evidence that pregnancy hastens the growth of the primary neoplasm. However the author is of the opinion that the increased vascularity of the pelvic organs and the increased tissue succulence during pregnancy favor more rapid dissemination through the lymphatics even though the growth of the local lesion is not obviously accelerated. Since contact bleeding (during coitus) is usually the first clinical sign of cervical carcinoma this sign is usually not elicited during the latter half of pregnancy. Hence the disease is usually far advanced when the diagnosis is made.

Niel en reports three cases of cervical carcinoma treated with radium during pregnancy and reviews forty one cases collected from the literature. In twelve cases abortion occurred early in pregnancy after radium irradiation. Of thirty two children born at or near term only three were mentally defective as the result presumably of the irradiation. The prognosis for the child is therefore relatively good much better than that reported following post-conceptional X-ray irradiation. Accordingly the author believes that interruption of the pregnancy is not warranted from the standpoint of the child.

The prognosis for the mother is extremely poor. Of the women whose cases are reviewed only eight were alive three years after the beginning of treatment. In thirty two cases in which labor occurred at term or early abortion occurred spontaneously there were five deaths from hæmorrhage at the time of delivery and two deaths from infection. Caesarean section was performed five times with one death due to eclampsia. In one of four cases in which supravaginal hysterectomy was performed after caesarean section the patient died after the operation. Caesarean section followed by total hysterectomy was fatal in all four cases in which it was attempted. The intracervical application of radium is condemned on account of the danger to the fetus (abortion, radium burn). Because of the danger of hæmorrhage during labor, caesarean section is the preferred method of delivery. If possible it should be supplemented by supracervical hysterectomy. The radical Wertheim operation is too dangerous during pregnancy when resistance to shock and infection is low. Whether or not the caesarean section is to be supplemented by hysterectomy depends upon the bacterial flora of the vagina which in turn depends to some extent upon the result of the radium treatment and the time of this treatment in relation to parturition. When radium treatment has been instituted relatively early in pregnancy and when the Ruge virulence test shows the vagina to be free from virulent bacteria the classical caesarean section alone is adequate. When virulent bacteria are present in the vagina supravaginal hysterectomy with careful cauterization of the cervical stump and canal is the preferred method of treatment. The operation should be supplemented by intensive radium or X-ray irradiation.

HAROLD C. MACK, M.D.

#### Paniel A. A. The Treatment of Abortion (Spontaneous or Induced) by the Method of 933. 1879.

In the treatment of threatened abortion all conditions which favor contraction of the uterus must be avoided. Absolute rest in bed is of the most importance. Additonal rest as well as control of pain may be obtained by retention enemas of laudanum. Hæmorrhage may be controlled by the use of a mixture of the fluid extracts of hamamelis, hydrastis and viburnum. Local treatment is useless.

In inevitable abortion conservative treatment is of no value. The uterus should be emptied by the

method most nearly approximating natural and spontaneous expulsion. The echolic drugs employed are quinine sulphate which is given by mouth and the pituitrin which is given intramuscularly. When the cervix is only partially effaced and incompletely dilated and more or less severe bleeding occurs a vaginal pack may be necessary. This should be introduced with great care for asepsis. A large roll of iodoform gauze may be used. The pack should always be removed after twenty four hours.

In cases of complete abortion expectant treatment is employed. Complete abortion is indicated by a closed cervix, a reduction of the size and an increase in the firmness of the uterus and reduction of the bloody discharge. In some cases the bloody discharge may be controlled with ergot.

In cases of incomplete abortion without infection there is the double danger of sudden septic hemorrhage and future infection. The cervical canal should be dilated under anesthesia if dilatation has not already occurred and any remaining remnants of the products of conception removed with a dull spoon curette. Evacuation of the uterus is usually equally urgent in febrile or infected cases. Lavage of the uterine cavity should be done first and followed by curettage with a dull curette. The results obtained by this method in 3000 cases treated during the past ten years have been better than those obtained by the conservative treatment formerly used.

Of 360 cases of incomplete abortion without infection which were treated in the clinic of Ciro, immediate curettage was done in 210. The average stay in the hospital in these cases was one week. Of 324 cases of infected incomplete abortion, curettage was done in 255 with no fatalities and an average stay in the hospital of nine days. Of 43 cases of complicated septic abortions with adnexal or parametrial lesions, immediate curettage was done in 18 with no ill effects. Further interference in such cases is delayed until the temperature becomes normal.

WILLIAM R. MEEKER, M.D.

Vogt Möller, P. Treatment of Sterility and Habitual Abortion with Wheat Germ and Wheat Germ Oil (Vitamin E). *Acta Obstet. Gynec. Scand.* 1933, 22, 9.

The author reports the results obtained in the treatment of twenty cases of habitual abortion and five cases of idiopathic sterility with wheat germ oil (fertilitan) and wheat germ. He defines wheat germ as an aggregation of cells (constituting about 1 per cent of the weight of the whole grain) from which new germ grows. It is a by-product of the grinding of wheat. The commercial preparations are not made of sprouting wheat germs as is stated. Wheat germ is a tasty and excellent source of vitamins B and E and a good source of Vitamin A and contains also some Vitamin A and amounts of the minerals of the wheat grain. Lasting favorable results obtained in treatment of sterility in cows with wheat

prompted the author to apply this remedy to cases of human sterility. Two cases in which apparently successful results were obtained were reported in 1931. Since then the treatment has been employed by a number of investigators under the author's supervision. The patients to whom it was given were considered free from organic causes of sterility although transuterine insufflation of steroidal oil and the Huebner test were not employed to rule out such causes. In seven of the twenty cases of habitual abortion living children were born after the administration of wheat germ oil and after the administration of wheat germ. Five women with primary sterility gave birth to two living children after the treatment. The manner in which the treatment acts is not clearly understood. As far as could be ascertained the patients whose cases are reviewed had been receiving diets containing adequate amounts of Vitamin E, but the author points out that it is quite difficult to estimate the Vitamin E content of some ordinary diet. He suggests the possibility that some women may require more than the ordinary amount of Vitamin E and that hypovitaminosis during pregnancy caused by the increase in the maternal metabolism and the vitamin requirements of the fetus may be responsible for many gestational disturbances such as thyroid enlargement, dental caries, anemia and neuritis. The administration of wheat germ oil is entirely harmless. Most patients treated with fertilitan have experienced definite improvement in health.

HAROLD C. MACK, M.D.

## LABOR AND ITS COMPLICATIONS

Beruti, J. A., León, J., and Durandourian, J. Effects of Early Artificial Rupture of the Membranes and of Antispasmodic Medication on Fetal and Maternal Anomalies of the Placental Period. *Effect of Antispasmodic Medication on Fetal and Maternal Anomalies of the Placental Period*. *Acta Obstet. Gynec. Scand.* 1933, 22, 136.

This article is based on sixty-six cases of pathological labor due to a dynamic insufficiency or a spasmodic state. The cases were classified into those of primary and those of multiparous and again subdivided according to the relation between the pre-eclampsia and the pelvis and the degree of dilatation of the cervix. This was done to determine the indications and contraindications for the procedures studied.

After the membranes were ruptured artificially the time required for complete dilatation of the cervix was noted. Records were kept also of the frequency and rhythm of the uterine contractions and after a tubal rupture of the placenta and in some cases hysterectomy. The membranes were graphed. The following remedies were used: pantothenic acid (a preparation of sulphate), lamine, pasmalgine (a preparation of paverin and a preparation of papaverine), and a preparation of papaverine.

most often. The amount administered varied from 1 to 3 c cm.

The authors draw the following conclusions:

1. In cases of primary or secondary dynamic insufficiency during the dilating period, especially in its second phase, artificial rupture of the membrane generally intensifies the uterine contractions.

2. The combination of small doses of pituitrin with an antispasmodic drug is especially efficacious in cases of hypodynamia.

3. In spasmodic states during the dilating period, artificial rupture of the membranes is indicated when persistence of the membranes is responsible for the dynamic insufficiency and prolongation of labor (close adherence of the lower pole of the membranes and the uterus which cannot be separated by the fingers and inelastic membranes which keep the head floating).

4. When the cause of the functional disturbance cannot be found, antispasmodics should be used.

5. When antispasmodics regulate the contractions but the external os remains unchanged, rupture of the membranes is indicated and should be supplemented by the administration of antispasmodics and, if necessary, small doses of pituitary extract.

6. Under these circumstances, treatment bringing about complete dilatation quickly shortens the expulsive period and frequently renders operative measures unnecessary.

7. The best results are obtained in cases with dilatation of more than 4 cm. and especially in those in which the head remains high in the absence of disproportion.

8. Failure usually indicates the presence of an important anatomical lesion of the cervix requiring surgical intervention.

9. The administration of large doses of antispasmodics predisposes to hemorrhage after expulsion of the placenta.

10. Rupture of the membranes with incomplete dilatation does not seem to affect the puerperium.

11. Artificial rupture of the membranes frequently regulates the rhythm of the uterine contractions when the administration of antispasmodics has no effect upon it.

In some cases the cervix dilates rapidly under treatment in spite of the absence of a change in the uterine contractions.

12. While the membranes constitute an obstacle to dilatation of the cervix, early artificial rupture of the membranes with or without the administration of antispasmodics should not be done in cases in which the disturbance is due to other causes.

W. H. M. RIVERO, M.D.

## PUERPERIUM AND ITS COMPLICATIONS

Smith, J. A. Further Investigation into the Source of Infection in Puerperal Fever. *J. Obst. & Gynaecol. Brit. Empire* 933: 199.

Further studies of the source of infection in puerperal fever have confirmed the author's earlier

finding which indicated that the majority of cases of severe puerperal sepsis are due to infection by the hemolytic streptococcus. The greater percentage of the deaths resulting from infection are also caused by this organism. Various other organisms play a minor part in the causation of the condition. All work on the bacteriology of the genital canal demonstrates that hemolytic streptococci are rarely found in the canal under normal conditions and that the most common sources of these organisms in the normal human body are the upper respiratory passages, particularly the tonsillar region. Taylor and Wright have shown that about 1 out of every 1,000 women harbor hemolytic streptococci in the genital region at the onset of labor, but that the majority of such carriers have a normal puerperium. The author cites also a number of other investigators whose work emphasizes the importance of extrinsic source of infection in puerperal fever.

Smith studied the infection due to the streptococcus pyogenes, hemolyticus and the bacillus coli. In the streptococcal infections the uterine secretions, blood, faeces, urine, throat and nose swabs of the patient and nose swabs from the immediate contacts were cultured. In the bacillus coli infections specimens were obtained only from the patients. Complete bacteriological and serological investigations were carried out for diagnosis and for correlation of the various strains from the different sources.

In the cases of infection due to the hemolytic streptococcus 78 per cent of the women were presumably infected from an extrinsic source and 22 per cent infected from an intrinsic source. The extrinsic source was the throat or nose of the doctor, student nurse or attendants (midwife, neighbor) in direct contact with the patient. The intrinsic source was the nose or throat of the patient. In all except 1 of the infections due to the colon bacillus the source was the urine or faeces or both. In 1 case a case of septic abortion a strain similar to the uterine strain could not be found in either the urine or the faeces.

The author concludes that the bacteria were introduced by hands or by instruments, sprayed or otherwise infected by carriers. The manner in which the streptococci become implanted in the genital canal is not clear. No definite proof has yet been offered that gross infection is conveyed from the mouth or nose by hand rather than by the spray of droplets.

The author cites records of small outbreaks of streptococcal puerperal fever traceable to persons who were carriers.

A. C. LASH, M.D.

Krieger, E. Venous Ligation in Puerperal Pyæmia. (Zur Vermeidung des puerperalen Sepsis.) *M. H. M. d. J. H.* 933: 1079.

In a discussion of puerperal pyæmia emphasis should be placed chiefly on the importance of prophylaxis. When the condition is established the surgeon must decide whether to remove the entire focus of infection, open an abscess or block off a disease process localized in the pelvic organs from

living connection with the body by operative venous ligation. A defect in the extraperitoneal procedure is the insufficient view obtained of the diseased focus. With the transperitoneal procedure there is the risk of suppurative peritonitis, ileus, duodenomesenteric occlusion, postoperative paralysis of the stomach and hemorrhage as well as the disadvantage of a deficient tendency toward healing of the laparotomy wound due to insufficient vitality of the tissues, which is a more serious disadvantage than in the case of an extraperitoneal wound.

The author therefore recommends combining the intraperitoneal—not transperitoneal—procedure with the unilateral extraperitoneal procedure, closing the abdomen after inspecting it accurately, localizing the diseased focus and then attacking the infectious focus in the vein by the extraperitoneal route. The venous ligation must be carried out as far from the thrombosed area as possible. The indication is clearly given when in the course of an illness lasting several days with steep rises of the temperature curve and corresponding remissions a number of chills occurring at the peaks of the fever, a rapid pulse of poor quality, progressive loss of

appetite and strength and deterioration of the blood picture, the patient suddenly gets worse after having shown improvement for a day or two. When several chills occur with a serious disease picture the operation is indicated because of the danger of metastases. Too long delay of ligation of the vein has brought the operation into discredit. It has been established that by the ligation the infected vein is isolated and that life can be saved if the operation is not performed too late. Complications occurring in a future pregnancy and delivery are not to be feared.

The author recommends as the method of choice, on the one hand, primary bilateral extraperitoneal ligation of the vein and on the other hand, a careful primary exploratory laparotomy to determine the changes in the pelvic organs and their venous area and to search for thrombosed vessels. On the side on which laparotomy reveals the thrombophlebitis, extraperitoneal venous ligation must be done immediately. So long as the thrombosis is localized to the efferent vessels of the pelvis, an increase in the incidence of cure of puerperal pyrexia may be expected from operation. DERICKSWELLER (G)

# GENITO-URINARY SURGERY

## ADRENAL KIDNEY AND URETER

Gutierrez R. The Surgical Aspects of Renal Agensis with Special Reference to Hypoplastic Kidney Renal Aplasia and Congenital Absence of One Kidney. *Arch S S* 1933 xx u 686

The author calls attention to the necessity for a complete urological examination for the recognition and differentiation of hypoplastic kidney renal aplasia and congenital absence of one kidney. These malformations are explained by an arrest of embryonic development. The author gives descriptive classifications of the conditions including the anatomical physiological and clinical findings and presents illustrative case reports. He emphasizes the ease with which hypoplasia and aplasia may be confused with secondary renal atrophy due to disease.

The solitary kidney may be found in the normal position or may be ectopic or cross ectopic. Cases of this condition are characterized by a single ureteral opening into the bladder.

The author believes that the treatment of hypoplastic kidney and renal aplasia should be surgical and that of congenital absence of one kidney symptomatic. *DOY L & H S M D*

Higgins C C and Hicken N F. Spontaneous Renal and Ureteral Fistulae. *J S S* 1933 u 817

The authors report a study of three types of spontaneous renal fistula—nephrocolic nephropelvic and renocolic—and one case each of spontaneous ureterovesicoperitoneal and uretero-periureteral fistula.

Spontaneous renal and ureteral fistulae are usually the result of advanced kidney disease such as tuberculous nephrolithiasis pyonephrosis hydronephrosis or neoplastic disease but occasionally arise from a perinephritic abscess secondary to caries of the vertebrae perityphlitic abscess pelvic disease or peripheral infections such as boils.

The diagnosis is made from the clinical symptoms and cystoscopic and roentgenographic findings.

The most important consideration in the treatment of spontaneous urinary fistulae is prophylaxis prevent on of the advance of kidney disease to the stage of fistula formation by early corrective measures. The closure of a renal fistula usually requires nephrectomy as the kidney is so generally diseased that practically no functioning tissue remains. In the cases of patients who are grave surgical risks conservative measures are indicated. Primary drainage of a perinephritic abscess usually results in sufficient improvement to permit nephrectomy later. The use

of indwelling ureteral catheters may facilitate the closure of a ureteral fistula but as a rule the kidney is harboring infection which has destroyed the parenchyma to such an extent that its conservation is useless. *LOUI NEUVELT M D*

Lee Brown R K and Earlam M S S. The Relation of Prolonged Immobilization and Urinary Tract Infection to Renal Calculus Formation. *A J S S & New Zealand J S S* 1933 iii 157

The authors review the literature report six cases showing the effect of prolonged immobilization on the formation of renal calculi and review current theories regarding the causation of renal calculi. They state that under normal conditions in soluble crystalloids which appear as a urinary deposit are probably prevented from crystallizing out by the formation of soluble complex salts rather than by the protective action of urinary colloids.

The first stage in the formation of a calculus is the deposition of crystals in the urinary passages. Mechanical conditions must be such that these deposits are retained for an adequate period. The authors believe that infection accelerates the formation of calculi but is not alone responsible for it. Prolonged immobilization by interfering with the drainage from the pelvis and calyces may allow sufficient time for the deposition of crystal which would otherwise not be deposited until the urine is voided. Retention of these crystals will then lead to the formation of calculi which otherwise would not be formed. *FRANK M COCHRAN M D*

## BLADDER URETHRA AND PENIS

Sokolov M. Primary Carcinoma of the Male Urethra (Ueber das primäre Carcinom des männlichen Urethra). *So A H* 1933 65

To date 103 cases of primary carcinoma of the male urethra have been reported. Sokolov reports another. He was able to find only 1 case described in the Russian literature (Bessonov 1914). Gonorrhea has been suggested as a cause by Rizza Flamm, Manne and many others but as the result of Aschoff's studies the possibility of the development of cancer of the urethra in the absence of any other pathological condition of this structure must be assumed.

The new growth is always situated in the anterior portion of the canal. On microscopic examination 2 forms are distinguished the tumor like polypous papillary or smooth new growths and the infiltrating growths. The latter readily lead to stricture. In both forms fistula formation results from the breaking down of the new growth. Metastases may occur into the regional lymph glands and also into remote

organs (lung pleura) The majority of the lesions are squamous cell cancers. Adenocarcinoma are rare and have their origin in the glands of Littre or Cowper.

Primary cancer of the male urethra is most common after the forty-fifth year of age. The first stages suggest chronic urethritis. Later the secretion becomes tinged with blood and severe pain and disturbances of micturition develop. The stricture becomes progressively worse and ultimately a diagnosis of tumor is made. The tumor increases in size and causes fistula formation. In the later stages urinary infiltration abscess formation and metastasis into the regional lymph gland occur.

The prognosis is unfavorable as early diagnosis is difficult. However when the tumor is located distally good results may be obtained by radical operation. The end results are not very encouraging. Early diagnosis is facilitated by biopsy therefore this procedure is recommended.

The treatment of choice is early radical operation. Roentgen or radium therapy should be used only in inoperable cases and when operation is refused.

Sokolov's case was that of a man fifty-nine years of age who was admitted to the hospital with complete retention of urine. Venereal disease was depicted. A brother sixty-four years of age was operated on for carcinoma of the prepuce. The patient had had disturbances of micturition for a year and complete retention of urine for a week. Examination disclosed infiltration of the scrotal portion of the urethra and enlargement of the inguinal lymph glands. Cystoscopic examination revealed practically nothing but hyperemia of the mucosa. The patient refused operation. Six months later he returned with a large tumor. As he still refused a radical operation the treatment consisted in removal of the involved part of the penis followed twelve weeks later by extirpation of the regional lymph glands under local anesthesia. Convalescence was uneventful. Histological examination showed the tumor to be a carcinoma myxomatodes. Six months after the operation the patient was still in good general condition. The author considers this a case of primary urethral carcinoma.

Petrinart V. Surgical Methods in the Treatment of Hypospadias (Atodi chirurgici n. 11 cura di il po padri) I. A. 1933 55

The author discusses the indications and the value of the various surgical procedures which have been devised for the radical treatment of hypospadias. As a rule any other abnormalities of the genital tract such as undescended testicle should be corrected before the hypospadias. The operation for rected before the hypospadias is best performed between the ages of six and ten years. The exact time depending upon the type of the condition. The author prefers the Beck von Acker method for the balanic forms of hypospadias, the method of Mathieu for the juxta balanic forms and the umbrella operation for the penoscrotal forms.

Whatever method is used a careful exact surgical technique patience on the part of the patient and surgeon and sufficient time intervals between the succeeding operations are essential.

PETER A. ROBERTS M.D.

## GENITAL ORGANS

Dillon J. R. Carcinoma of the Prostate J. I. 1933 x 56

In cases in which a fairly definite diagnosis of carcinoma of the prostate has been made it is rarely possible to offer a hope of cure. Therefore the treatment must usually consist of palliative measures to render the patient as comfortable as possible for the remainder of his life. Survival seldom exceeds three years.

Twelve years ago in the case of an old man with the diagnosis of carcinoma of the prostate Dillon performed a perineal type of operation and followed it by irradiation for ten hours with 50-mgm radium placed in the lateral portions of the capsule. The patient made a normal recovery from the operation lived for three years with very little discomfort beyond that caused by the occasional passage of sounds and died of generalized metastases.

The method of operating used by the author today in cases with a doubtful diagnosis of malignancy of the prostate was developed about seven years ago. In this procedure the prostate is exposed by the usual perineal technique and enucleated en masse by an entered Y incision in the prostatic capsule. The entire prostatic urethral mucosa is then removed from the membranous urethra to the bladder neck. In advanced cases in which the capsule is infiltrated the growth is shaved off a sufficient thickness of capsule being left to form a new prostatic urethra. Infiltration around the bladder neck is carefully trimmed off and any suggestion of a median bar is removed. Bladder neck bleeding is controlled by interrupted catgut ligatures. Two rubber tubes containing 50 mgm of radium each are placed in the regions of each lateral lobe. The posterior flap containing the posterior lobe is brought up and sutured at its apex between the radium tubes. The rectum is separated from the pelvic space wall below the level of the radium tubes and the space packed with odorless gauze at least an inch in thickness the entire prostatic capsule to the membranous urethra being covered. Radium tubes a bladder drainage tube and gauze packing are brought out together on the right side of the perineal wound. The radium tubes are left in place for from ten to fifteen hours from 1000 to 1400 hours of cross fire irradiation being given in the area in which the new growth.

At first the author employed the radium tubes only in cases with a definite diagnosis of carcinoma but during the past several years he has been using them also in suspicious and doubtful cases. As prostatic carcinoma frequently starts in the posterior lobe which is usually not removed in either supra

pubic or perineal prostatectomy a potential source of malignancy of the prostate is left in practically all prostatectomies.

In conclusion Dillon says that the operation described is of most benefit in the questionable cases in which there is a possibility of cure that it is more conservative than the radical perineal operation and that it gives good functional urinary control with no particular increase of risk in the postoperative convalescence. CLAUDE D. HOLME, M.D.

#### MISCELLANEOUS

Morson, A. C. The Relationship Between Genito-Urinary Haemorrhage and Diseases of the Vascular System. *P. R. S. M. J. L.* 1933, 1: 87.

Morson classifies diseases of the vascular system which cause hemorrhage from the genito-urinary tract as (1) those in which changes occur in the blood and capillary endothelium such as the purpuras and (2) those in which alterations of a pathological nature are taking place in the walls of both large and small blood vessels but there is no change in the blood itself such as arteriosclerosis, hyperplasia and atheroma. He reports fifteen cases of arteriosclerosis in which hemorrhage from the genito-urinary tract was the chief manifestation of the disease and two cases of thrombosis of the corpora cavernosa. He states that the latter were not cases of true priapism because in priapism the whole

organ is enlarged whereas in thrombosis of the corpora cavernosa there is no swelling of the glans penis. Morson advises against the surgical treatment of priapism. FRANK M. COCHRAN, M.D.

Cattaneo, M. The Frei Test in Lymphogranuloma Inguinale, the Fourth Venereal Disease of Nicolas and Favre (La p o a d Frei nella l i granulomat si i guai l (IV malattia a di Nicola Favre) *Arch. Ital. d. Ch.* 1933, 27: 1329.

Cattaneo reports six cases of lymphogranulomatosis inguinale in which the Frei test was of great aid in the diagnosis. As is well known the Frei test which is based on an allergic reaction of a sensitized body to an antigen from the pus isolated from a bubo of the patient is of great importance in distinguishing this fourth venereal disease from other conditions associated with inguinal lymphadenopathy. In five of the author's cases the diagnosis was made by the Frei test alone. In one this test was supplemented by biopsy. In one case the Wassermann reaction was positive and syphilitic inguinal adenitis was suspected but when the Wassermann reaction became negative after anti-syphilitic treatment there was no change in the adenitis. A positive Frei test then led to the diagnosis of lymphogranulomatosis in a syphilitic. In all of the author's cases treatment with large doses of potassium iodide quickly resulted in cure.

FLORENCE T. LEDDY, M.D.



## SURGERY OF THE BONES JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES JOINTS  
MUSCLES TENDONS ETC

Hodges I C and Ledoux A C Osteomalacia  
A Brief Review of the Modern Concept  
of the Disease *Am J R entz* no 1933 xxx 590

Custom restricts the use of the term osteomalacia to the particular softening of the spine pelvis and the bones of the extremities which sometimes occurs in pregnant or lactating women. The fundamental process is probably identical with the rickets of children and famine osteoporosis. The authors believe that the active agent in osteomalacia is a deficiency in the diet and that parathyroid action is merely incidental yet they admit that certain parathyroid tumors produce decalcification of the pelvic bones practically identical with that seen in the osteomalacia of child bearing women.

Rickets and osteomalacia are identical diseases. Most arguments to the contrary are based on negative evidence. Both conditions are due primarily to a deficiency of Vitamin D. Osteomalacia may be called adult rickets. Vurchow taught that the two diseases are different since in one newly formed bone fails to calcify while in the other bone once well calcified loses its calcium. However Conheim demonstrated a constant process of destruction and reformation in bone similar to that occurring in all other tissues and McCrudden enunciated the generally accepted theory that in osteomalacia physiological destruction of old bone and its replacement by new osteoid tissue takes place but for some reason the calcium liberated from old bone is lost from the body and does not calcify the new osteoid tissue. Steenbock and others have since found that the cause of the calcium loss is a deficiency in Vitamin D.

CHESTER C GUY MD

Gaehnegs G. The Experimental Production of  
Osteitis Fibrosa in the Rat by Means of Lead  
Acetate Narcosis and Glucose (Ueber  
metallische Erzeugung von Osteitis fibrosa durch  
Eit acetat Narkose und Gluk. ebend. nndung an  
Rat) *Frankf. Ztschr. f. P. th.* 1933 21 54

Although formerly the osteitis deformans of Paget and the osteitis fibrosa of von Recklinghausen were believed to be the same disease the recent studies of Schmorl have demonstrated an essential difference between them. In Paget's disease bone forming processes predominate whereas in osteitis fibrosa resorptive processes predominate. Moreover recent metabolic studies have shown that osteitis fibrosa is a secondary reaction of the skeletal system to injury of the bone. In agreement with these findings is the fact that in osteitis fibrosa there is an increase in the calcium excreted in the urine and the cause may be a

parathyroid tumor. Moreover an identical histological picture as well as an increase in the excretion of calcium may be produced also by injections of parathyroid extract chronic lead poisoning the subcutaneous injection of ammonium chloride the daily induction of narcosis with ether or chloroform and the administration of amounts of glucose sufficient to cause a blood acidosis.

While the previous experimental work on this problem was carried out on large laboratory animals (rabbits and dogs) the author undertook his experiments on small laboratory animals (young rats and mice).

In his first group of experiments a 1 per cent solution of lead acetate was injected 0.3 c.c.m. being given at first and 0.5 c.c.m. after a few days. In the experiments on rats the dosage was gradually increased to 1 c.c.m. Twenty mice and fifteen rats were used. All of the animals died. The longest survival of mice was seventeen days and the longest survival of rats thirty days. The skull sternum vertebral column long bones and ribs were examined histologically.

Osteitis fibrosa was not produced in the mice. The author believes that this fact may possibly be explained by the assumption that the experiments were not continued long enough the longest period being only seventeen days. In the rats the results were positive. The typical tissue changes were observable in these animals after a period of fourteen days.

In the second series of experiments twenty mice and eighteen rats were subjected to the daily induction of ether narcosis for periods varying from thirty minutes to one hour. In the cases of some of the animals the experiment was continued for thirty days. In the mice no positive results were obtained. In the rats the very slight beginnings of osteitis fibrosa could be demonstrated in the vault of the skull and a slight fibrosis and lacunar resorption in the epiphyses of the long bones.

In the third series of experiments twenty rats and mice were given daily subcutaneous injections of glucose solution. At first a 50 per cent solution and later a 70 per cent solution was used. In the cases of the mice the dose was gradually increased from 0.3 to 0.5 c.c.m. and in the cases of the rats from 0.5 to 1 c.c.m. In some cases the experimental period lasted as long as forty five days but most of the animals died sooner. Changes in the sense of an osteitis fibrosa could not be demonstrated in either the rats or the mice.

From his results the author concludes that as removal of the parathyroids causes a decrease and the administration of parathyroid extract causes an increase in the calcium content of the blood the function of the parathyroids is a hormonal control of the

acid base balance and the parathyroids regulate the blood reaction. When the metabolism of calcium is mobilized by exogenous experimental means such as the administration of lead acetate the same changes occur without participation of the parathyroids. The fact that the most marked changes of this type take place in such parts of the skeleton as areas of the epiphyses near joints and the vertebrae is explained by the greater functional demands made on these parts of the skeleton. MAX BRÜDE (Z)

Snyder C H. The Association of Pulmonary and Other Tuberculous Lesions in Cases of Proved Bone and Joint Tuberculosis. *J Bone & Jts* 1933 xv 924

Of 161 consecutive cases in which a clinical diagnosis of tuberculosis was made during the past year the pathological report was positive or specimens were positive on direct smear, potato egg culture or guinea pig inoculation in 100. In 50 there was no pathological or bacteriological report. In 14 the guinea pig inoculation and pathological findings were negative.

In 27 cases there was definite clinical and roentgenological evidence of parenchymal or adult pulmonary tuberculosis and 13 presented such evidence of active childhood tuberculosis. Of 41 children from one to fifteen years of age 8 (19.5 per cent) had parenchymal and 10 (24.3 per cent) had the childhood type of tuberculosis. The total incidence of lung involvement in this group was therefore 44 per cent. Of 59 children sixteen years of age or older 10 (32 per cent) had parenchymal lesions and 3 had childhood lesions. The incidence of lung involvement in this group was therefore 37 per cent. Of 37 adults 15 (40.5 per cent) had pulmonary lesions.

Renal tuberculosis was found in 8 per cent, tuberculous epididymitis in 6 per cent, and tuberculosis of the tonsils in 5 per cent. Single tuberculous lesions were found in only 14 per cent. Because of the frequency of renal involvement and the fact that renal involvement was discovered relatively late in the cases reported, the author stresses the importance of more frequent and careful urinalyses with guinea pig inoculation in cases of true skeletal tuberculosis.

Of 44 cases in which the Mantoux test was carried out a negative reaction was reported in only 2. In a later test in the cases of 26 patients with tuberculosis of the bones and joints and 2 patients with old poliomyelitis the results were positive within seventy-two hours in all, whereas the controls remained negative. At first a 1:10,000 dilution and then a 1:100 dilution of tuberculin protein trichloroacetic acid was used. RUDOLPH S REICH M D

Pirie A H. Kashin Beck Disease. *Am J Ro* 1933 xv 621

Kashin Beck disease is endemic in a portion of Siberia north of Manchuria. It was first described in 1850 by Kashin and was discussed in 1906 by Beck. In 1931 Schupatshoff described it as osteoarthritis endemica. It is unknown in North

America. Its occurrence is apparently related to a raw climate, a water supply contaminated by manure and a diet deficient in vitamins. In the area in which it is endemic vegetables are unobtainable for about half the year and the principal food is unripe wheat. It is found in animals in the area in which it is endemic and has been produced in experimental animals by feeding them bread obtained from that area. It occurs in both sexes and at all ages.

The pathological changes are found mainly in the bones and joints. There is a marked rarefaction with thinning of the cortex and shortening due to arrest of growth. The joint changes are similar to those of advanced osteoarthritis. The resulting deformities are most marked in the fingers. Shortening of the fingers and swelling of their joints produces the so-called "bear's paw" deformity.

The clinical symptoms begin with joint and muscle pains followed by joint swelling, hemorrhagic spots in the skin and fever. After the acute stage has passed deformities associated with muscle atrophy appear. Dentition is delayed. The gums are spongy and rachitic rosaries are found. The disease therefore seems to be a combination of rickets, scurvy and polyneuritis.

The condition progresses to chronic invalidism if the patient remains in the area in which it is endemic but disappears without treatment if he moves out of that area. CHESTER C GOV M D

Catta R. Histological Researches on the Behavior of the Synovial Membrane in Immobilization of Joints (Picerche istol ghe sul c m p tamento d l sinale n l immobiliz a o e d l e articolazioni). *Chr d g id m m* 1933 xiv 273

The author reports the findings of histological studies made on the tibio astragalar joints of rabbits after immobilization for periods ranging from four to thirty-one days. The changes noted were classed as degenerative and proliferative. They began as early as the fourth day and were especially marked in the reticulo endothelial tissue of the synovial membrane. The proliferative changes tended to reduce the size of the joint space. Whether these changes are due to the immobilization or to the edema and vascular changes occurring after the application of the plaster cast has not been determined. PEREA A ROS M D

Julliard C. Coarctitis (La racol) *R n d de la S se R m* 1933 lvi 737

The condition discussed by the author usually follows a fall. It is characterized by pains in the scapular region, pain on pressure over the coracoid process, pain on active or passive abduction of the arm and displacement of the arm posteriorly and atrophy of the deltoid and arm. Elevation of the arm anteriorly causes no discomfort. The atrophy of the deltoid and arm is secondary and requires some time to appear. There is no anesthesia in the cutaneous area supplied by the circumflex nerve. Injection of novocain into the painful region of the

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coracoid process enables the patient to perform all movements without difficulty.

It has been attributed to a lesion of the axillary nerve and

This condition has been attributed to a lesion of the articulation a lesion of the circumflex nerve and subacromial bursitis. From a study of fifty three cases the author concludes that the underlying factor is a lesion of the coracoid process analogous to the well known lesion occurring in the anterior tubal tubercle the transverse vertebral processes and the epicondyles. He suggests calling it coracoditus. Treatment should be prolonged rest. A plaster cast

The treatment should be prolonged. A plaster cast is contraindicated. A plaster cast is probably unnecessary. Injections of novocain have given lasting results. ALBERT F. DE GROOT M.D.

Snoke P O      Vertebral Epiphysitis and Osteo  
chondritis      J B & Jo 15 1933      963

The round painful back with irreducible deformity was described by Scheuermann as a clinical entity. The roentgenogram in this condition shows an area of osteitis on the diaphyseal side of the epiphyseal line with wedging of the vertebra. Schmorl described an outpouching of the nuclear substance into the spongiosa through congenital or traumatically produced orifices in the cartilaginous plate with resulting kyphosis due to loss of nuclear substance and failure of endochondral growth.

Snake differentiates between lesions on the physical side of the vertebral body and prolapse of the surfaces of the vertebral body and prolapse of the nucleus pulposus due to a pathological change probably osteochondritis in the cartilaginous plate. He emphasizes that in cases of definite trauma it is of importance from the medicolegal point of view to note the onset of symptoms which does not respond to treatment.

note the effect of treatment

Richard A. Chronic Arthritis (L)  
thru tébral s b n ques Rec d o shop

1933 xi 449

the anatomy of the vertebrae

The author reviews the anatomy of the ear, nose, and throat and calls attention to the effect on the nose of malformations, hyperostoses, and inflammations in chronic ear, nose, and throat disease. The pathogenesis of involvement may be referred to various regions and viscera and lead to an erroneous diagnosis. The author concludes that ear, nose, and throat arthritis is of the following type:

Chronic vertebral arthritis which is a true

1 Diffuse vertebral arthritis

2 Arthritis with a local syndrome of high depend on the involved regions most frequently involved are the cervical and lumbar segments

3 Chronic traumatic arthritis resulting from  
4 Chronic infectious arthritis syphilitic phod  
diseases such as tuberculosis syphilitic phod  
Malta fever gonorrhoea and osteomyelitis  
Ankylosing arthritis including the rhizomel  
and Bechterew's disease

5 Ankylosing arthritis including the spondylitis of Marie and Bechterew's disease. Previously accepted theories regarding conditions belonging to this group are being modified by recent

### TRACT OF SURGERY

The symptoms of the different types of arthritis are discussed in detail. Chief among the general symptoms of chronic vertebral arthritis is pain. The pain is more intense and more paroxysmal than that of Pott's disease and is often accompanied by rigidity of the spine. The degree of loss of function depends upon the extent and localization of the arthritis and the condition of the intervertebral disks which are the parts of most importance in the mobility of the spinal column.

Before the days of roentgen examination the osteophytes which are so frequent in vertebral arthritis often caused diagnoses of osteomyelitis most varied mistaken diagnoses of osteophytes but also changes in the bodies of the vertebrae the intervertebral disks and the joint processes. Profile roentgenograms are of more value than anteroposterior roentgenograms and often it is worth while to take profile roentgenograms from both the right and the left side. The Potter Bucky method is used. Stereoscopic roentgenograms are often of value. The article contains a number of roentgenograms showing the various pathological changes. The ligaments often become visible as the result of ossification. The treatment depends on the nature of the disease.

The treatment depends on the nature of the infection is indicated. In syphilitic arthritis mixed infection is indicated. In tuberculous arthritis and certain indeterminate forms which are improved by rest and agitated when the patient leads an active life. Albee and Halstead grafts have given good results. In rheumatism with a tendency toward ankylosis surgery of the parathyroids has produced effective results. Immobilization with corsets and the use of the Roentgen ray are of great value.

In some cases immobilization with corsets and roentgen therapy have proved beneficial. Roentgen therapy is particularly effective in preventing the formation of osteophytes which is one of the most troublesome features of vertebral arthritis. Of the other physical methods of treatment diathermy seems to be the most effective. In tuberculous arthritis tuberculin and chrysotherapy may be used as adjuvants but the essential part of the treatment is immobilization of the diseased part with grafts.

Goss MORG M.D.

Junghan II The Anatomical Peculiarities of  
the Fifth Lumbar Vertebra and of the Last  
Lumbar Intervertebral Disk (Danisch  
Brosch. 1914) 116 Seiten 4 Heforth 2 Chr  
127 n. Le d n. ndsch. be) 4 h f orth 2 Chr  
933 xx iii 60  
The sacral vertebra lies in the part of the  
second of em

The last presacral vertebra lies in the part of the body which is most unstable in the period of em-

biological development and is subject to special conditions of strain. Therefore diseases which occur also in other parts of the skeleton run an unusual course in the vertebra. Osteitis deformans is frequent here.

Of importance are fusion of the last presacral vertebra with the sacrum (sacralization) and changing of the first sacral vertebra into a lumbar vertebra (lumbarization). These two anomalies can be differentiated only when the total number of vertebrae can be determined. For practical reasons it is best to designate such vertebrae as lumbosacral transitional vertebrae. The form of the transition (widening of the transverse process with or without impingement on the lateral parts of the sacrum, joint formation and sclerosis) varies greatly. The explanation of pain producing transitional vertebrae requires further and more detailed clinical investigation. It is necessary always to consider also the position of the lateral parts of the sacrum as these may be on the same level as the base of the sacrum, higher or lower. The significance and origin of acquired transitional vertebrae and of ossification of the lumbolumbar ligament are discussed briefly.

A special discussion is devoted to the small intervertebral joints which may be crescent shaped or flat.

Of particular importance are the cleft formations in the vertebral arches. In *tenor spina bifida* of the last lumbar vertebra occurs in from 5 to 6 per cent of persons. In spite of the gaping of the spinous processes the apophysis of the spinous process may be present in which case it lies in the gap as a free piece of bone. Occasionally such a bone impinges on the spinous process of the next higher vertebra.

Of the greatest practical importance is the cleft formation in the pedicle of the vertebra, *spondylolysis*, which is the prerequisite of true *spondylolythesis*. On the basis of anatomical and embryological studies these cleft formations must be considered congenital. For the purpose of differentiating them from true *spondylolysthesis* the anterior displacements of the vertebrae which occasionally occur because of particularly oblique surfaces of the small vertebral joints should always be designated as *pseudospondylolytheses*.

Of equal importance with the changes in the last lumbar vertebra are the changes in the last presacral intervertebral disk. The size of the lumbosacral angle depends chiefly on the condition of this disk. It is certainly questionable whether a small lumbosacral angle can in itself produce pain as is claimed by the Americans. The peculiar strain to which the lumbosacral area of transition is subjected accounts also for the special frequency at this site of intervertebral disk changes, which in their most severe forms resemble *osteocondrosis*. Characteristic of these changes are a decrease in the height of the intervertebral space and the development of a sclerosis of the adjacent bone surfaces which are demonstrable in the roentgenogram. To determine the extent to which such a disappearance of the inter-

vertebral disk in transitional vertebrae is responsible for the abnormal movements in the newly formed joint between the transverse process and the lateral portion of the sacrum and thereby in the development of a sclerosis at this site further clinical investigations are necessary. JUNGHANS (Z)

Haberler G. Benign Non Specific Metastatic Idiopathic Synchondritis Occurring in Childhood as a Typical Disease Picture (Die gutartige eitrige und pyknochrone Synchondritis im Kindesalter als typisches Krankheitsbild). *Chirurgia* 1933 clx v 625

The author reports the cases of the disease of the idiopathic synchondrosis which because of its acute course with usually an initial high fever is called osteomyelitis. The patients were children between the ages of six and eight years, the time of normal ossification of the synchondrosis.

In this condition *coxitis* is apt to be thought of first because in the beginning there is complete muscular fixation of the hip joint. *Coxitis* is ruled out however by the absence of pain on palpation and strain. Pain on pressure is elicited much more readily below the insertion of the adductors in the region of the medial half of the inguinal fold. In the second stage in which the general fixation ceases and there remains only limitation of abduction suggesting an extra-articular process medial to the joint, the diagnosis is made easier by the presence of a palpable swelling. In the beginning the roentgenogram offers no assistance but later it shows rarefactions in the region of the synchondrosis which are usually followed by demarcation processes and relatively rapid healing with sclerosis.

In the three cases reported operative procedures were not necessary but complete healing has not yet occurred in all. Even a sequestrum of the entire symphyseal portion of the os pubis and ischium was not extruded. Osteochondritis and tuberculosis were ruled out. SIEVERS (Z)

Burman N S and Sutor C J. A Study of the Degenerative Changes of the Menisci of the Knee Joint and the Clinical Significance Thereof. *J Bone & Jt Surg* 1933 xv 835

After review of the literature Burman and Sutor report the findings of a pathological study of 200 menisci at autopsy and 85 removed at operation.

They conclude that degeneration of the meniscus occurs at a typical change of age but is not always parallel with the age period. They have observed such degeneration in surgically removed menisci, injured menisci and menisci remaining intact in the joint. They suggest calling it *meniscosis*.

They believe that *meniscitis* is not an entity. *Meniscosis* may not be manifested clinically but in the later decades of life may occasionally be the cause of pathological fracture of the meniscus in the absence of trauma and in the presence of arthritis. Meniscal cysts are of degenerative origin.

PAUL C. COLONNA, M.D.

Glissan D J Contracted Toes Australia & New Zealand J S 1933 iv 149

Contraction of the toes may be primary or secondary. Although the primary type is well known and readily recognized the author has been unable to find any discussion of the primary or idiopathic form in the English or American literature notwithstanding the fact that it has the distinctive features of a clinical entity.

The primary form is characterized by metatarsophalangeal by perextension and interphalangeal flexion which vary in degree and in fixation of the deformity. It is definitely a deformity of young adult life. Most of the author's patients were males. Glissan can suggest no definite theory as to the cause of the condition but deems it reasonable to conclude that such a deformity may represent a biological reaction to the conditions of modern civilization under which the feet are used less and less as propulsive organs. However in some of his cases there was a history of chronic gonorrhea with wasting of the legs and feet. As a rule the condition is bilateral. There is a singular absence of the deformities which are associated with the secondary types such as claw foot, equinus, hallux valgus and shortening of the tendon of Achilles.

Treatment is usually sought because of pain in the balls of the feet. In some cases pain may occur in the toes. Cramps in the legs and feet are frequent.

Anatomical changes in the foot are the basis of the condition and must be understood and kept in mind if operative correction is contemplated. All of the structures dorsal to the metatarsophalangeal joints namely skin, tendons, tendons, blood vessels and nerves are shortened, as are the collateral ligaments of the joints. On the plantar surface the tendons of the long and short flexors, especially the former, are contracted, and stretching and redundancy of the plantar soft tissues are produced by the principal dorsal contraction.

In discussing the secondary form of contraction of the toes which is so often associated with claw foot, hallux valgus and equinus and may follow burns of the foot, the author emphasizes that as this condition is so constantly associated with hallux valgus it must be regarded as a part of the general deformity of the foot and treated accordingly. When possible the treatment should be conservative but in cases of severe and long-standing deformity operative correction is necessary.

The conservative treatment which should always be tried in the early cases consists principally of daily stretching of the contracted joints with active attempts to flex and extend them. The patient should wear a low heeled flat shoe which is roomy in front and will allow for an increase in the shoe of the foot as the contraction is overcome. A metal tarsal bar or pad should be arranged in the shoe. This will have a tendency not only to relieve the

In the advanced stages in which operation is undertaken the author uses a technique consisting essentially of division of the tendons ligaments or joint capsules which because of their contraction are factors in the deformity. The correction thus attained is maintained by splintage.

JAMES K. STACK, M.D.

## SURGERY OF THE BONES JOINTS MUSCLES TENDONS ETC

Jones R W Extra Articular Arthrodesis of the Shoulder J Bo & Jm 15 1933 xv 85

The position of election for ankylosis of the shoulder joint following tuberculosis of the shoulder is abduction at an angle of from 70 to 80 degrees external rotation of 30 degrees and forward flexion of 30 degrees. For permanent ankylosis this position must be maintained for from three to five years. Jones advises extra articular fusion of the shoulder joint in the terminal stages of the disease to insure ankylosis and prevent recurring deformity. Destruction of the glenoid and the greater part of the humeral head results in considerable inward displacement of the upper end of the humerus which leaves the acromial process projecting beyond it. An extra articular fusion may be performed by implanting the acromion into the upper shaft of the humerus. In this way a firm bony ankylosis is obtained between the humerus and the scapula without encroaching on the diseased area and the cosmetic appearance of the shoulder is improved.

In the technique used by the author a straight incision with its center on the tip of the acromion process is made over the point of the shoulder. The process is made over for about 3 in. midway between the clavicle and the spine of the scapula and down the clavicle and the spine of the scapula and down the clavicle and the spine of the scapula. Both upper and lower surfaces of the acromion process are freshened with a broad flap of bone 1 in. wide and 2 in. long is raised from the outer surface of the upper end of the humerus and the clavicle are partly fractured a few spines from their outer ends. With the arm held abducted position the whole acromioclavicular joint is angulated downward, hinging at the point where the bones were half fractured and is wedged beneath the flap of bone. The fixation bone is increased by sutures and if necessary bone osteoperiosteal grafts from the tibia are implanted. The wound is closed in layers and immobilized in a plaster spica in abduction and forward flexion of 30 degrees and rotation of 30 degrees.

After removal of the sutures a plaster applied and after four months is replaced by a reduction frame. Roentgenograms show the frame is discarded as soon as the humeral head is in position. The author reports three cases in which the interval has elapsed for the operation to be judged. In no case

aggravation of the disease or recurrence elsewhere and in all three cases bony ankylosis resulted

RUDOLPH S REICH M.D.

## FRACTURES AND DISLOCATIONS

Boehler L. Contra Indications to Massage and Passive Movements in Fresh Bone and Joint Injuries (Offene Kniegelenke gegen Massage und passive Bewegung bei frischen Knie- und Gelenkluxationen) *Mittheilung der Medizinischen Gesellschaft* 1933 40

Three requirements in the treatment of bone fractures are: (1) exact reduction of the displaced fragments (2) continuous fixation of the fragments until bony healing in good position has taken place and (3) during the immobilization of the properly reduced fragments sufficiently active use of as many as possible or all joints of the injured limb and of the entire body with avoidance of pain to secure good circulation and prevent muscle and bone atrophy and joint stiffening.

Fractures in which the fragments are not displaced will heal in good position under any method of treatment and even without treatment if injury to joints muscles tendons vessels nerves and skin is avoided. Even though they are not the best treatment early movement and massage are better than the use of thickly padded plaster casts or splints. In a young person a joint that has not been destroyed by injury and is not diseased cannot become stiff even when it is retained for a long time in an unfavorable position. So far as the functional end result is concerned it makes no difference whether such a patient is treated with padded plaster dressings or by massage.

The assertion has often been made that effusions of blood disappear more rapidly if massage is used but Boehler states that he has never seen a hemorrhagic effusion in the soft tissues which did not disappear spontaneously just as rapidly as and often more rapidly than effusions treated by massage. However for bloody effusions in body cavities and under the scalp or the lumbar fascia puncture is necessary.

When the displaced fragments are accurately reduced and maintained constantly in good position the limb is free from pain. In parts of the limb that are not immobilized active motion to the fullest extent is possible. Fresh traumatic swellings disappear if the arm is suitably elevated on a double right angled splint or the leg is elevated on a Braun splint and late swelling is avoided if all of the free joints are moved actively.

In cases of joint fractures stiffness is best prevented by effecting as perfect a reduction of the displaced fragments as possible and preventing too early movement of the involved part of the limb.

In fractures in which the fragment ends are poorly nourished massage and passive movements favor pseudarthrosis. In fractures in the region of the elbow massage and passive movements lead to

extensive ossification of muscles and ligaments. The occurrence of muscle atrophy during prolonged immobilization need not be feared for if the dressings are properly arranged the muscles can contract strongly even when the limb is immobilized. With immobilization of the wrist in fracture of the radius all of the forty muscles of the hand and forearm can function and the tendons of the fingers can move actively against one another more than 6 cm.

If a fractured joint is accurately reduced and maintained constantly in good position until bony consolidation has taken place and at the same time the fractured limb is used a freely movable joint is usually obtained but if from the first day massage is given and passive movements are made the joint becomes stiff or loose. In fresh bone fractures and joint injuries massage and passive movements are dangerous as they can be carried out only by interrupting the immobilization and this favors redisplacement of the well reduced fragments. All physical therapeutic measures including massage and passive movements should be delayed until bony union has taken place.

In the cases of older persons there should be no return to heavy work until several weeks or months after complete bony consolidation has occurred. In such cases physical measures offer an excellent means of bridging the gap in time. Especially in older persons will insist that something be done for them in the interim. Strength returns most rapidly under systematic work, exercises and active movement of all joints. Only in this way can atrophy of the muscles be prevented. Every year many thousands of injured persons are permanently crippled by massage and passive movements. O. STANI (Z)

Crétin A. and Pouyanne L. The Action of Certain Metals on the Repair of Bone (Action de quelques métaux sur la consolidation osseuse) *Bulletin de la Société de Chirurgie* 1933 No 4 321

After an experience of thirty years surgeons are not in agreement concerning the results of metallic internal fixation of fractures of the long bones. However after an initial popularity the method has fallen quite generally into disrepute and the technique has become more diversified instead of standardized. The dissatisfaction with the use of metal prostheses is due to the frequent failure of consolidation to occur under what appear to be satisfactory mechanical conditions. The authors believe that improvement of osteosynthesis will be obtained not by further variations in the technique but by a study of the biological effects of the method.

One of the factors in osteosynthesis requiring further study is the influence of various metals on the formation of the callus. A number of investigations of this problem have been carried out but most of them with crude methods and with results that have often been conflicting. The conclusions of various surgeons are summarized briefly as follows.

Aluminum is absorbable (Duval, Elberg and Danborn). It is not absorbable (Zierold).

Silver is perfectly tolerated (Lemerle) It is only fairly tolerated (Zierold)

Copper stimulates the formation of bone (Zierold)

Iron is toxic (Lenche and Policard) It favors consolidation (Lange) It is without effect (Rolland)

Magnesium is recognized by all surgeons as absorbable but according to Lambotte it stimulates bone production and according to Zierold it inhibits bone production.

Nickel is without effect (Potarca) It is stimulant (Hes Groves) It is harmful (Zierold)

Lead is without effect on the tissues (Zierold) Zinc when pure is slightly disturbing to bone formation (Zierold) In certain combinations it stimulates the callus (Le Grand) It is merely well tolerated (Rolland)

In the investigations carried out by the author pieces of metal were fixed at the sites of fractures which were produced in rabbits. The implants were both intramedullary and extramedullary. At the end of two months the animals were sacrificed and the specimens studied macroscopically and microscopically. The distribution of any metal absorbed at the sites of the fractures was determined by treating the tissues with dyes which form insoluble compounds with the metal. The most useful and widely applicable reagent is alizarin which produces various shades and colors with various metals. The authors' results may be summarized as follows:

**Aluminum** When an intramedullary prosthesis was used the metal was not corroded. When treated with calcium salts the epiphyseal cartilage and the surrounding muscles showed a marked regenerative callus which was abundant and composed of osteoid tissue was markedly deficient in calcium. Calcification by cellular repair was retarded. When an external prosthesis was used the callus was solid and the metal unaltered. Microscopic examination showed penetration of the callus by the aluminum and lack of fixation of calcium by the osteoid tissue.

**Silver** When an internal prosthesis was used the metal was slightly blackened. The callus was solid and there was a small zone of necrosis. On microscopic examination minute quantities of silver were found about the re-formed haversian canals. The callus was slightly less mature than normal. When an external prosthesis was used the results were the same. The metal was solidly embedded in the callus. There was minimal retardation of repair.

**Calcium** Calcium introduced into the tissues became quickly covered by a film of the hydroxide. The immediate action was caustic but this effect was of short duration. Although the pure metal is mechanically unsuitable for a prosthesis it is of interest because of the possibility of its use in alloys. When the calcium was placed in the medulla only pseudarthrosis resulted. The medullary cavity contained calcareous masses and the new bone was rich in calcium. However the ends of the fragments were poor in cells and rich in calcium a condition

which seemed to prevent restoration of the bone at the site of fracture and resulted in failure of effective consolidation. Extramedullary prosthesis was used, repaired with an excessively large callus which matured more rapidly than normal. These findings that calcium incorporated in an alloy may be a powerful stimulant to repair.

**Copper** Copper employed internally or had a cytotoxic effect which was very extensive because the diffusibility of the metal. Consequently copper influenced little if at all. On microscopic examination salts were found in minute quantities in the cell nuclei.

**Iron** When iron was placed in the medulla was extensive impregnation of the new of the neighboring epiphyseal cartilage, the prosthesis the cells showed decalcification. At a distance growth was stimulated in a disordered character. There was little delay of calcification. The use of an extra-osseous resulted in little impregnation of the bone callus was essentially normal.

**Magnesium** When magnesium was placed in the medulla it was partially absorbed. It marked stimulation of the connective tissue of the callus with marked retardation of ossification. When the fixation was extramedullary, impregnation of the bone was limited to the metal. The metal was partially absorbed. The callus was solid and microscopically normal. The metal had a stimulant effect if any.

**Nickel** Nickel employed either intra- or extra-osseously stimulated cellular repair causing an inflammatory aspect. The result hypertrophied, irregular callus. The nickel chiefly in the connective tissue.

**Lead** Intramedullary implants of lead definitely toxic effect on the callus and on all respects. On microscopic examination lead was found in the haversian canals. A lead was employed externally a solid callus obtained. The new bone showed signs of necrosis but the total effect on the callus was minimal.

**Zinc** When zinc was placed either within or outside of the medullary cavity there was no necrosis extending even to the muscles. When there was a disordered impregnation of the epiphyseal cartilage. The infiltration of the tissue with calcium was disturbed.

The author concludes that all metals are degree toxic. Some of them are well tolerated others such as magnesium and calcium may perhaps be employed to advantage in alloys of the properties. ALBERT F. DE CROIX

Schneider, C. G. Acromioclavicular Dislocation Autoplastic Reconstruction. I. F. 5 133 9

The author describes his technique of reconstruction of the acromioclavicular and the

clavicular ligament with the use of fascia lata for fixation in acute and chronic dislocation of the acromioclavicular articulation.

In this procedure the inferior acromioclavicular ligament is restored with a mattress suture of a  $\frac{1}{4}$  in fascial loop each end of which is carried downward through a clavicular drill hole laterally and across the inferior surface of the joint and up through its respective drill hole in the acromion. The end of the loop are crossed on the upper surface of the acromion and sutured to each other with twisted silk. The coracoclavicular ligaments are then reconstructed by carrying a 1 in fascial strip under the lower surface of the coracoid process and upward behind the clavicle subperiosteally at the site of insertion on the trapezoid and crossed on the upper surface of the clavicle. There the loop under tension is sutured with braided silk. The ends of the loop are drawn along the upper surface across the acromioclavicular joint and sutured together with silk to the acromial end of the acromioclavicular ligament previously dissected up, the ligament being thus restored. In this manner all of the ligaments necessary for the integrity of the acromioclavicular joint are reconstructed and the clavicle is held firmly in position.

ELLEN J. B. HEIDER, M.D.

Ruge, E. Closed Injuries of the Spine (Die Geschlossene Verletzungen der Wirbelsäule). *Ergebn. d. Ch.* 1933, 11, 63.

Because of their frequent occurrence in traffic accidents and because of the improvement of roentgenological diagnosis by the use of a movable diaphragm injuries to the spine have been the subject of scientific discussion by many surgeons during the last ten years.

Between the sixth and ninth years of life marginal apophyses occur on the growing spine and there appear at the ends of the transverse and spinous processes small valvular apophyses which may be confused with the results of injury. In the third decade these apophyseal nuclei tend to disappear. Other abnormalities that must be taken into account in the interpretation of roentgenograms of the spine are (1) fissure formations of the vertebral arches which are more frequent in the cervical and lumbar segments than in the thoracic segment and usually produce median defects occurring less often in the middle of the halves of the vertebral arches (2) failure of union of the pedicles of the arches which leads to spondylolisthesis and (3) the crescentics on the cervical and lumbar ribs which are usually unilateral.

The weight bearing capacity of the normal spine depends less on the firm structure of the vertebral bodies than on the internal pressure of the entire number of intervertebral disks and the degree of the physiological curvatures of the spine. In old age osteoporosis and degeneration of the intervertebral disks leads to kyphosis of the thoracic spine. Degeneration of the intervertebral disks and dehydra-

tion of the nucleus pulposus are also factors determining spondylarthrosis.

Very mild injuries to the spinal column contusion and strain can be diagnosed only by excluding bony injuries by roentgen examination. The pain is usually most severe at the level of the tenth thoracic vertebra. Spines thus affected present malformations of greater or less importance. The spondylitic spine is especially easily injured. The cartilaginous nodules described by Schmorl which are formed by a breaking through of the substance of the intervertebral disks into the bodies of the vertebra occur very frequently without demonstrable trauma.

In consequence of the increase in athletics and traffic and the frequent use of roentgenograms for diagnosis the incidence of fractures of the spine in relation to all bone fractures has increased from 0.33 per cent in 1877 to 3.8 per cent in 1929. Fractures of the spine occur more often in men than in women most frequently at the juncture of the thoracic and lumbar segments and much less frequently at the juncture of the cervical and thoracic segments. In about one fifth of the cases more than one vertebra is fractured. In most cases the patient was in a stooping posture when struck by the force causing the fracture. The spine is bent to excess and fractures partially. There occurs a sprain fracture or confusion fracture a wedge-shaped collapse of a vertebral body at the thoracolumbar juncture with the apex usually pointing anteriorly and less frequently laterally. When the action of the force is diminished one or more of the bony fragments may separate and cause spinal cord injury and paralysis (one sixth of the cases). The weight of the falling human body and even muscle pull in a movement of defense can bring about the fracture of a vertebra. A blow in the back from the pole of a wagon or the horn of a cow can cause the much rarer direct fracture. This is characterized by injuries to the vertebral arches combined with injuries to the processes and the body of the vertebra. The well known signs of simple compression fracture—pain, stiffness of the back and the formation of a kyphosis—are usually only incompletely developed. Often there is only a slight projection of a spinal process.

It is particularly difficult in the differentiation between diseases such as osteomyelitis, spondylitis deformans and old fractures of the spine. Repeated roentgen examinations demonstrate the formation of callus.

The average period of disability caused by a compression fracture is seventeen weeks. The insurance drops from an average of 45 per cent to barely 30 per cent. Frequently fractures of other bones particularly of the os calcis occur simultaneously. Sometimes transient hæmaturia and concussion of the brain occur. Spinal concussion with bladder and rectal disturbances, diminution of the reflexes and disturbances of sensation is not easily to be distinguished from intervertebral hæmatomata.

According to Magnus the treatment should be conservative—four weeks of bed rest flat on the



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ELLYN J. B. BAHEER, M.D.

Ruge E. Closed Injuries of the Spine (Die geschlossene Verletzung der Wirbelsäule). Festschr. Chir. 1933 x 63.

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Particularly difficult is the differentiation between diseases, caries, osteomyelitis, spondylitis deformans and old fractures of the spine. Repeated roentgen examinations demonstrate the formation of callus.

The average period of disability caused by a compression fracture is seventeen weeks. The insurance drops from an average of 45 per cent to barely 30 per cent. Frequently fractures of other bones, particularly of the os calcis, occur simultaneously. Sometimes transient hæmaturia and concussion of the brain occur. Spinal concussion with bladder and rectal disturbances, diminution of the reflexes and disturbances of sensation is not easily to be distinguished from intervertebral hæmatomata.

According to Magnus the treatment should be conservative—four weeks of bed rest flat on the

back and early massage of the erector muscles. The patient should not be allowed to sit up until the fifth or sixth week, and should not be allowed to leave his bed until two or three weeks later. A plaster bed and a supportive corset should be avoided as they favor muscle atrophy. Boehler loosens the impaction by hyperextension and orders a supportive corset. Reposition is particularly urgent when there is paralysis. American surgeons favor the Albee and Hibbs ankylosing operations. In cases of fracture with paralysis and cord symptoms they perform a laminectomy. German surgeons prefer conservative management because the paralysis may be caused by a subdural or submeningeal hematoma and prove transient. However, Schmieden has shown that a penetrating fragment of bone can contuse the cord and must be removed. The only contra-indication to immediate laminectomy is severe shock. Complete transverse paralysis are hopeless with or without operation.

Of 104 closed compression fractures observed by the author in which the ratio of fractures of the cervical vertebrae to fractures of the thoracic vertebra and of fractures of the thoracic vertebrae to fractures of the lumbar vertebra was 2.4:8, cord injuries were present in 86 per cent of the cases of fracture of the cervical vertebrae, 48 per cent of those of fracture of the thoracic vertebrae, and 30 per cent of those of fracture of the lumbar vertebrae. In the first group the average period of disability was twenty-two and a quarter months; in the second, five months; and in the third, from five to seven months. At the end of the first year the decrease in earning power was 34.4 per cent in the cases of fracture of the cervical spine, 44.5 per cent in those of fracture of the thoracic spine, and 37.8 per cent in those of fracture of the lumbar spine. At the end of the second year the corresponding figures were 31.2, 36.1, and 27.7 per cent, and at the end of the third year 31.2, 30, and 14 per cent.

As a sequel to paralysis of the bladder there often develops an ascending infection of the urinary passages with subsequent stone formation in the kidney. Such stone formation may occur also in the absence of fracture of the spine.

There is much dispute as to whether Kummell's disease, delayed collapse of the vertebra following trauma, is a clinical entity. The explanation of the collapse is that the original fracture was not promptly recognized.

In tetanus a vertebra may fracture as the result of spasm.

Vertebral dislocations occur only in the cervical spine and are fatal in 75 per cent of cases. Rapid reduction gives good results, but the results of operative reduction are poor. Other vertebrae can become dislocated only after the breaking off of an articular process.

Injuries to intervertebral disks occur most frequently in oblique fractures of the vertebral bodies, but if degeneration is already present they may occur as isolated injuries.

Epiphyseal separation and separation of laminous plate are rare and occur only in persons. On the other hand fractures of the first cervical vertebra are frequently demonstrated by roentgen ray from various angles.

In direct fractures the spinous process breaks off completely, whereas in indirect only the tip is broken off. Fractures from pull occur most frequently in the spinous of the sixth and seventh cervical and the second thoracic vertebrae. Fractures of the transverse processes often occur as accompanying other injuries to the spinal column but are rare as isolated injuries. They are found often in the third and fourth less often in the second and least often in the first and fifth vertebrae. Multiple fractures of the transverse processes are usually found on one side, apparently they are caused by reflex muscle pull, bed rest, massage, and non use. Full work is usually restored in from six to eight weeks.

Isolated fractures of an arch are usually recognized until after the appearance of callus on roentgenogram. Like fractures of the articular surfaces they are caused by the action of force. Pressure on the cord makes operative necessary. According to Ludloff fractures of the articular processes give rise to audible crepitation.

Fracture of the body of a vertebra is rare in the cervical spine. On the other hand atlas and epistropheus are frequently exposed. Of 3 fractures of the atlas cited by the author 6 were fatal. The odontoid process of epistropheus is frequently broken off in injuries. Dislocation in the atlanto-epistropheus articulation is apparently impossible without fracture of the odontoid process. Fracture of the odontoid process is usually the result of indirect trauma caused by muscle pull. In fracture of the odontoid process bony healing usually does not occur and resection and death may result at least from six months to twenty-three years after injury. It is as yet too early to express an opinion as to the value of Albee's bridging operation in this injury.

Dislocations of the cervical vertebrae and of the cervical vertebrae from the third downward are rare and appear to be possible after the articular or transverse processes have been broken off. The diagnosis is arrived at by description of the accident, the pains, the deformity, the rigidity, and any cord symptoms, paralysis that may be present. It can be made with certainty only with the aid of roentgenograms. Attempt at reposition appears indicated.

In the lumbar spine a fracture from stress occurs in lifting when there is sudden relaxation of the lumbar musculature. Sacral pain is because of pressure on the fifth lumbar vertebra, a bony canal that is too narrow, but because of formation of marginal proliferations. The most

tion known as spondylolisthesis which is due to arrest of development of the arch portion of the fifth lumbar vertebra may become painful as the result of a comparatively slight trauma. For fracture of the arch of the fifth lumbar vertebra severe injury is necessary. If conservative measures are not successful the Albee or the Hibbs operation is indicated.

In the sacrum compression fractures of the sacral vertebrae are possible. In almost all cases they are associated with fractures of the pubic bone or ischium. However fissures are more frequent than compression fractures. Caudal symptoms are not uncommon. A characteristic symptom of fracture of the sacrum is inability to sit for any considerable length of time. Fracture of the coccyx can be detected more easily with the palpating finger than by roentgen examination. If there is forward displacement stool retention may result. If conservative therapy fails operative removal is advisable.

According to Gagele deforming spondylitis is a disease of the intervertebral disk. Vertebral callus on the other hand is confined to the injured vertebra. However the possibility that a spondylitis of the vertebral column may be made worse by a severe trauma is not ruled out.

A causal connection between Bechterew's disease attributed to infection and trauma is rejected.

Osteomyelitic processes attack chiefly the arches and processes and less frequently the bodies of the lumbar vertebrae. Trauma can be recognized as a cause only when it has resulted in a hematoma which has suppurated and involved the periosteum. Trauma as a cause of tuberculosis of the spine is still less probable. DECKER (Z)

Lamy I. Congenital Dislocation of the Hip. A Statistical Study and a Consideration of Poor Results (Luxation congénitale de l'hanches. Statistique et ma s ré li ts) B H i m i n S c d ch g e i d l 1935 E 441

In the author's method of reducing the congenitally dislocated hip the reduction is done under general anesthesia and the first position of the limb is flexion of 90 degrees with abduction of 90 degrees. The limb is left in this position for from three to four months. The position is then changed to extension of 120 degrees abduction of from 30 to 40 degrees and internal rotation of from 20 to 30 degrees and the limb is left in this position for three months. At the end of that time the position is changed to complete extension abduction of 20 degrees and internal rotation of 80 degrees. The limb is left in this position also for three months.

On completion of the treatment and removal of the apparatus the child is kept in bed for one month. During the first two weeks of this month treatment with light massage and ultraviolet light is given. During the second week the child is allowed to get up for periods of five minutes 4 or 5 times a day. During the second month he is allowed up for five minutes every hour. He is not allowed to walk alone

before the third month. After from six to eight months normal walking is allowed for periods which do not exceed half an hour and are separated by long periods of bed rest.

Statistics are presented on 500 cases treated by the closed method prior to 1925. Eighty nine and two tenths per cent of the patients were girls and 63 per cent of the dislocations were bilateral. The incidence of bilateral dislocations was about the same in both sexes.

The treatment resulted in a clinical cure in 430 cases and failed in 70 (14 per cent). The incidence of clinical failure was 25.8 per cent in the cases in which both hips were dislocated and only 6.6 per cent in those of dislocation of the right hip alone.

In 402 reductions in the cases of patients up to the age of four years the incidence of failure was only 9.8 per cent whereas in the cases of patients over five years old it rose to about 30 per cent.

Light cases with poor functional results are reported. The roentgenograms show that the failure was due most often to trophic changes in the head and neck of the femur.

The author believes that immobilization produces demineralization of the femur which may be sufficient to cause spontaneous fracture or deformity of the femoral neck. Traumatism from the effort at reduction (particularly when the method of open reduction is used) may lead to the phenomena of osteoarthritis. To decrease the effect of complete immobilization Lamy has been using a special type of plaster spica which permits flexion and extension at the knee. He emphasizes the importance of good medical treatment, diet regulation and treatment with ultraviolet light. MARRAS W. POOLE M.D.

Wardle E. N. The Etiology and Treatment of Slipped Epiphysis of the Head of the Femur. B I J S g 933 310 313

The author divides cases of slipped epiphysis of the head of the femur into two groups. In one group he places the cases with disordered glandular function in which epiphyses other than the epiphysis of the head of the femur are also involved. In discussing this group he cites the theory advanced by Kocher in 1894 that the slipping of epiphysis of the head of the femur may be due to a localized osteomalacia which tending to occur in the areas of most recently formed bone weakens the attachments of the epiphyseal cartilage and metaphysis.

The other group of cases distinguished by the author are those in which indirect trauma has involved the epiphysis and no joints other than the hip joint are involved. In both groups the body weight and muscular action are secondary factors increasing the deformity.

In his discussion of the treatment the author condemns open operation for correction of the deformity in the primary stage because of the discouraging statistics of those who have tried it. For cases in which bony fusion between the epiphysis and the metaphysis has left a disabling de-

formity he regards subtrochanteric osteotomy as the operation of choice.

The author's treatment is conservative consisting essentially of traction on the injured hip in a position of relative adduction. This is carried out by means of a fitted frame which is essentially a Jones spinal frame with extens on ends attached to the leg pieces similar to the distal half of a Thomas splint. The outfit includes a groin strap attached over the affected side which acts to prevent more adduction than the small amount necessary. Both legs are included in the traction in order to prevent tilting of the pelvis. The stabilization of the pelvis prevents the abduction that might otherwise occur. The traction is accomplished by fitting the usual adhesive bands which are fitted from the groin to the malleoli to the ends of the extension splints.

The author emphasizes the importance of careful nursing to reduce the possibility of the usual diffi-

culties associated with immobilization and. In his cases roentgenograms are made every 2 weeks and when the epiphysis is finally in position an arbitrary period of perhaps one month is allowed for the reposition to become stable. The patient is then removed from the frame and is allowed to lie free in bed and non weight bearing for the affected hip are instituted. The exercises are continued until no further increase in motion can be gained. The time required for the stage to be reached varies in different instances. In the final stage of treatment a walking splint is used for a period of a year from the beginning of treatment.

The article includes a number of roentgenograms showing the progress made in reduction and maintenance of the femoral neck by the method which the author recommends.

JAMES K. STY

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Ipsen J Arterial Reflexes (Arteric il e) 11  
cl reg S d 1933 lv ii 219

The author has attempted to elucidate some of the reflex arcs influencing the arteries. The investigations were carried out chiefly by measuring the superficial temperatures. The commonly used term vasomotor disturbance has been shown to be inadequate and often misleading. It is necessary to discriminate between changes in color (capillary changes) and changes in temperature (arterial changes).

The innervation of peripheral arteries is reviewed briefly particularly with reference to the anatomy and physiology. It is emphasized that contraction of arteries may take place independently of the nervous system through the blood stream or through the surroundings.

A number of skin reflexes of superficial arteries are described especially reflexes to cold temperatures and it is shown how different reactions are brought about by greater or lesser degrees of cooling. The author mentions also arterial reflexes caused by heat and inflammation and some special vascular reflexes.

In an investigation of the reflex arcs by division of nerves it was found that the arterial spasm which occurred can be explained by the elimination of the controlling vasodilating function.

The arteriospasm occurring frequently in poliomyelitis is apparently the result of similar inhibition of the vasodilating function. From pathological anatomical nerve change in poliomyelitis it seems to be clear that the inhibiting function occurs from the nucleus lateralis sympathicus in the spinal cord. Therefore it is necessary to presume a persistent antagonism between the vasomotor function of the limiting cord and the dilating function of the lateral nucleus analogous to the first and second neurone of the striated muscle. This antagonism may partly explain also the difference between the sympathetic and the parasympathetic systems.

The author describes post-traumatic reflexes and submits a hypothesis regarding their nature.

In conclusion he discusses the importance of operations on the cerebral centers and the arterial reflexes occurring during narcosis.

Gloia E Accidental Injury to the Common Carotid Artery Double Ligation Recovery (Arteric il e) 11  
cl reg S d 1933 lv ii 219  
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The author reports a case of injury to the common carotid artery in a woman forty-one years of age.

The cause of the injury was a fragment of glass hurled from a shattering wine bottle. Examination revealed a small wound approximately 1 cm long on the left side of the neck below the angle of the jaw from which a forceful rhythmic jet of blood escaped. In the first aid treatment pressure bandage were applied as tightly as possible.

On the patient's admission to the hospital the pulse was of good quality. The left temporal pulsations were not so forceful as the right. When the neck bandages were removed the small wound was found covered by a clot and a nut sized swelling was apparent immediately beneath it. The swelling was distinctly pulsating and it increased in size rapidly as the external pressure was released.

An incision was made along the sternocleidomastoid muscle under local anesthesia and after considerable difficulty the bleeding was traced to the common carotid artery. Gentle traction on a ligature passed beneath the artery disclosed an irregular stellate laceration of the artery approximately 1 cm from the bifurcation of the artery. When the tear was grasped with a hemostat the patient suddenly became pale and respiration ceased. On removal of the hemostat and the hypodermic injection of adrenalin the patient's color was restored and respiration began immediately. A silk ligature tied securely below the arterial laceration did not stop the hemorrhage. The bleeding continued from the distal or superior margin of the tear and necessitated the application of a ligature just above this point. The spicule of glass could not be found. The incision was closed with a small drain and the patient returned to bed.

Salt solution was given by hypodermoclysis. As the patient was known to have hypertension blood transfusion was deemed inadvisable.

On the second day the blood pressure reading in the right arm was 145. It was not taken in the left arm. On the eighth day the reading were right arm 115 left arm 130. On the fourteenth day they were right arm 125 left arm 140. Later examination showed the pressure to be the same on both sides.

X-ray examinations from all positions failed to disclose the presence of a foreign body.

The wound healed by primary intention. Recovery was uneventful. The patient was discharged on the fourteenth day after the operation and is still well.

Reports of injury of the common carotid artery are extremely rare if war wound are excluded. The mortality of such injuries is high when treatment is delayed.

Duplay and Reclus Coudray and others have called attention to the persistent bleeding from the

upper end of a lacerated common carotid artery Morgagni and Valsalva noted it in experiments on dogs. Experiments have demonstrated a communication between the common carotid of one side and that of the other by way of the external and internal carotids. Following ligation of one common carotid artery a reflux or retrograde flow is established which satisfactorily supplies a compensatory circulation to structures dependent upon these branches for their supply of blood. Travers Brown and others have successfully stopped hemorrhage in man by a single ligature below the torn common carotid.

From a review of the literature the author draws the following conclusion:

1. When it is imperative to suture a tear of the common carotid artery a double ligation—above and below the laceration—will control the bleeding satisfactorily.

2. There is usually an adequate communication between the carotids of the two sides by way of the internal and external carotid arteries.

3. Because of the reflux flow from the communicating branches a single ligature below the tear is frequently insufficient to stop hemorrhage.

4. In cases in which this collateral circulation is preserved no cerebral symptoms or lesions will result.

GEORGE C. FROST, M.D.

### BLOOD TRANSFUSION

Breitner B. Indications for Blood Transfusion (Die Anzeige tellung zur Bluttransfusion) *Chirurgia* 1933 v. 53

Blood transfusion should be limited strictly to its proper indications. The following questions are still to be answered:

1. Are there diseases in which blood transfusion is injurious? Breitner describes three cases of sepsis in which he was unable to escape the impression that there are such conditions. In these cases there were no transfusion injuries or injuries of the heart or kidneys. When such cases are collected and studied at autopsy the answer to the question may be found.

2. Why are blood transfusions sometimes unsuccessful? Contrary to the theory most generally

accepted Breitner believes that septic conditions are chiefly responsible. Nevertheless he admits the average incidence of cure in septic conditions is 40 per cent. Moreover while patients with may recover without transfusion the beneficial effect of transfusion in sepsis may be evidenced definitely by the transformation of a severe condition into a subacute condition following gradual recovery.

Especially the findings of Seitz permit the conclusion that in chronic septicopyemia blood transfusion may be advantageous. Naito reported 100 per cent. had successful results in 56 per cent. of his cases. The necessity for venesection before transfusion in chronic sepsis must be emphasized. Rudel first to call attention to contraindications in a jeopardized recipient. Breitner mentions the epoch-making discovery of Hesse and that hemolytic shock is due to spasm of the arteries of central origin and may be relieved by immediate transfusion of compatible blood. Hesse states also that Hesse was able to confirm his experiments in a clinical case and that Chytrý has had a similar result.

In conclusion Breitner makes the following statements:

1. Blood transfusion should be employed in anemias and in chronic anemias due to protracted loss of blood (in these conditions it is superior to infusions). hemorrhagic diatheses with anoma, the composition of the blood severe burns, carbon dioxide poisoning, choleraic bleeding and ulcerative colitis.

2. A good result may be expected in pernicious anemia, hemoptysis, hemolytic shock, hemophilia, morbus maculosus, veribofus, postoperative shock, secondary anemia in nursing infants, sepsis (general bacterial infection) and preoperative and treatment after major surgical operations.

3. A trial of transfusion is justified in agranulocytosis, acute leukemia and other blood diseases and numerous skin diseases.

4. Blood transfusion has proved useful in leukemia without anemia and in scurvy, tuberculosis and decompensated organic diseases.

FROST

# SURGICAL TECHNIQUE

## ANTISEPTIC SURGERY TREATMENT OF WOUNDS AND INFECTIONS

Constantin and Iaras    Deep Plantar Phlegmons  
(Des phlgm plant s profond) / de ch  
1933 1 326

The prognosis of deep plantar phlegmon is poor as amputation is frequently necessary to save life and death often results from septicæmia.

The condition is usually due to piercing of the plantar aponeurosis by a foreign body such as a needle splinter or nail which carries infection to the cellular tissue of the subaponeurotic plantar space by way of a tendon or synovial membrane and thence to the osteo-articular surfaces. The walled in pus seeks to escape but is blocked below by the median aponeurosis in front by the digito-plantar fold and also above. It therefore usually extends in a posterior direction into the calcaneo-tibiotarsal canal and the space between the muscles of the calf. Access to the latter is gained by way of the flexor tendons and their synovial sheaths or by way of the cellular tissue surrounding the vasculo-nervous bun lie.

Tibiotarsal arthritis is very common in deep plantar abscess. When the synovial sheaths become involved the infection spreads easily as these sheaths are in direct contact with the peritarsal articulations. In flexion of the tendons the contact becomes still closer. The vasculo-nervous bun lies also and extends on of the ps.

The symptoms are not well known. Early diagnosis is of importance for when the infection has penetrated deeply serious complications are to be feared. The first sign is usually a more or less discrete inflammatory œdema of the dorsal region. Deep plantar pressure is necessary to elicit the characteristic pain. Movement of the toes and tibiotarsal movements are painless. The history is of importance. Wounds of the sole are more dangerous than those of the toes or heel. After the formation of an abscess the symptoms are characteristic. The severity of the general symptoms is striking. The face is yellow as in severe general infections, the pulse small and the temperature high. Pain interferes with walking and the limb is kept in internal rotation. The sole and retromalleolar region are red and are painful on deep pressure. From these parts the inflammation extends to the inner surface of the calf which is redematous and painful. The external surface of the calf is frequently almost normal. The spontaneous pain is very severe. Operation should be performed without delay. Sometimes the X-ray is of aid in demonstrating the signs of decalcification of the astragalus or metatarsal osteitis.

The treatment indicated is immediate wide incision and vaccine therapy. Small incisions merely waste time. When the tendons are involved Leclerc's rules for incision of the hand should be followed. Wide exposure is imperative. A tourniquet should be applied to clear the operative field. General anaesthesia is best.

In cases of marginal abscess with pus in the sheaths of the abductor of the fifth toe early and wide incision is usually sufficient.

In cases of deep plantar abscess without involvement of the tibio-calcaneo-astragalar canal the sole of the foot should be incised from one end to the other in the direction of the greatest pain. The incision should extend to the tibio-calcaneal canal but should be stopped there if there is no further extension of pus. When dorsal œdema is present it is advisable to make a dorsal counter incision. The wound may be kept open with gauze or a drain.

In cases of diffuse plantar phlegmon involving the tibio-calcaneo-astragalar canal and the leg the point of attack should be in the retromalleolar region. A curved incision should be made around the malleolus in front of the vessels. After exposure of the tendons by sectioning first the superficial leaf and then the deeper leaf of the annular ligament the tendon sheaths should be opened and any pus that has collected should be evacuated. The knife should then follow the path of the infection first toward the sole and then toward the leg. Toward the sole it is well to explore with a curved retractor.

When the pus has extended along the flexor tendon of the great toe the incision should be extended along this tendon to the digitoplantar fold.

When the suppuration has centered in the sole the incision should be made parallel with the third interosseous space.

The incision should be deep but should be stopped as soon as the pus is reached.

If the infection has spread to the leg the incision should be made along the internal surface of the tibia the tibial insertions of the soleus muscle detached and the deep vasculo-nervous bundles of the leg exposed. Such an incision must be about 30 cm long.

If there is a large quantity of pus and it has spread in front of the tendon of Achilles an external counter incision should be made behind the heels.

When there is synovitis of a toe or infection of a crushed toe the incision should be begun at the site of the lesion and continued in the direction of the calcanean canal to healthy tissue. If the infection has spread to the leg the incision should be continued to the calf.



# INTERNATIONAL ABSTRACT OF SURGERY

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Osteo articular complications are common. When such complications are present it is advisable first to open the tibiotarsal joint and remove astragalus for drainage. If osteitis has begun amputation is necessary. In fact amputation is advisable even in the presence of only tibiotarsal arthritis if the general symptoms are severe. The dressings should be changed daily and if there is a tendency toward equinus a small elastic corrective apparatus should be applied.

EDITH SCRAMACHE MOORE

Bakay L. and Klimko D. The Importance of Tetanus Infection on in Hungary (U b e d e t e t e n u s i n g e r T e t a n u s i n g e r U n g a r n) O r s k e p 1933 x i s

Unofficial reports of tetanus cases in Hungary were studied from various points of view but not all of the data were clear enough to be of much value. In the period from January 1 1928 to May 1931 1 103 cases of tetanus were reported to the government authorities. Six hundred and eighty-two were those of males, one hundred and eighty-eight cases—603 of which terminated fatally and 389 of which were cured—were available for further investigation. During the second half of the year 1931 and several months of 1932 374 additional cases were reported but the 3 series of cases were worked up separately.

In the first series the lowest morbidity was shown by the capital Budapest with only 2 cases in a population of 928 088. In this connection it was found that according to investigations made from here 70 per cent of samples of dirt from gar- dens and fields and 70 per cent of samples of dirt from footwear contained tetanus spores.

The difference in the incidence of the disease and the variation in the incidence of cases showed different regions. In the majority of cases the entrance of the spores was a very small wound which at the beginning of the infection was visible or had already healed. Of the first series of cases tetanus neonatorum occurred in 46 causing 41 deaths and of the second series tetanus puerperal in 17 causing 17 deaths. Of the first series tetanus occurred in 3 with 4 deaths. The lowest numbers of cases occurred in 4 with 25 deaths. The highest numbers of cases occurred during June and July. The infections of December and January and the highest numbers (184 and 215) during June and July. The infections occurred most frequently during the first and second decades of life—249 and 97 cases and highest in cases respects. The mortality was most common in the cases of persons over seventy years and under one year of age. The infection was most common in persons who worked in the fields and the members of their families or households. Most frequently the tetanus had its origin in an injury of the foot and next most frequently in an injury of the hand.

The mortality was higher the closer the injury to the spinal cord but injuries of the cord were very rare.

The period of incubation was longest after injury to the most remote peripheral parts of the body and the prognosis most unfavorable in cases with a short incubation time. In the first series of cases there were 176 with an incubation time of five days or less and a mortality of 86 per cent. In the second series there were 10 such cases the duration of 72.8 per cent. In the first series the disease developed after twenty days in 45 cases and in the second series in 42 cases. The mortality in these cases was 31.1 and 47.8 per cent. In cases not treated with serum the mortality was definitely higher. Of 33 such cases in the first series all were fatal and of 25 in the second series 18 were fatal. The best results were obtained by combined subcutaneous, intralumbar and intravenous injections of serum. In addition to the use of serum simultaneous treatment with magnesium sulphate, morphine and chloral hydrate is advisable. In the first series of cases the mortality in cases receiving this additional treatment was 40 per cent and in the second series 50 per cent. Of 372 cases in which the dose of serum used was recorded it was insufficient in 50 per cent. The authors believe that most of the remedies which affect the nervous system have a toxin mobilizing effect in the sense in which that term is used by Dejour as they break up the union of the toxin with the brain substance.

The data concerning prophylactic injections of serum are very incomplete. Frequently for economic reasons antitoxin could not be administered even when tetanus had already developed. However in the first series of cases there were 12 in which prophylactic injections were given with 3 deaths (incubation time in 1 three days and in 2 five days) and in the second series 4 cases in which they were given with 1 death. In addition to the instruction of the peasants with regard to the importance of measures suited to local conditions in the fields of proper footwear during work in the fields is stressed. However poor the economic conditions in the country may be the wearing of shoes or boots in the fields is not a luxury but a necessary protection against most serious infections. If this had been more generally recognized in the past the incidence of tetanus would have been 5 per cent lower. The tetanus problem in Hungary is 50 per cent a footwear and economic problem.

ENDRE MAKAI (2)

## ANESTHESIA

Schley W. Pathologic Anatomical Findings in Aortic Death (U b e r d i e p a t h o l o g i s c h e n t o m o r p h o l o g i s c h e n f i n d u n g e n b e i A o r t a n t o d e n) Z e i t s c h r i f t f u r P a t h o l o g i e u n d B a k t e r i o l o g i e 933 I m 64

After reviewing the literature on aortic death first discussing the cases with injuries of aortic organs and then especially those with fatal liver and

kidney changes the author reports two cases of the latter type.

The author's first case was that of a forty-two-year-old man in good general condition who was operated upon for duodenal ulcer. Anaesthesia was induced with 8.32 gm of avertin and 100 gm of ether. The resection was accomplished without difficulty. On the second postoperative day urinary suppression began and sixty-five hours after the operation death occurred with the signs of renal insufficiency. At autopsy the operative field was found intact and free from signs of peritonitis. Histological examination disclosed a cloudy swelling of the damaged urinary tubules, fatty degeneration of other portions of the tubules, fatty infiltration in the large lobules of the liver, degeneration in the central portions of the liver and fine fatty degeneration of the muscle fibers of the heart.

The second case was that of a fifty-five-year-old man with a rectal carcinoma who received 0.03 gm of avertin per kilogram of body weight. The operation was performed without difficulty. The next day urinary suppression began and soon afterward death resulted. At autopsy the peritoneum was found smooth and shiny. The liver was very large and was yellow because of fatty changes. The kidney parenchyma appeared cloudy. Fatty degeneration of the liver was shown also by microscopic examination. The change was of the type of large drop fat infiltration. In the kidneys the glomeruli were compact and cellular and presented the picture of an acute glomerulonephritis. In the damaged tubuli the epithelium was cloudy and the fatty changes were slight.

These cases demonstrate that avertin has a toxic effect on the liver and kidneys manifested by degen-

eration changes and acute glomerulonephritis. Avertin is recommended as a basal narcotic but should not be used in the cases of patients with organic damage.

BAVCEK (C)

Foss H L and Schwalm L J. The Relative Merits of Spinal and Ether Anaesthesia. *J. I. M. S.* 1933 61: 1717.

This report is based on 4,000 consecutive operations, one half of which were done under ether and one half under spinal anaesthesia.

Deaths in the operating room were 10 times more common when ether was used than under spinal anaesthesia.

Postoperative deaths within the first few days were likewise more frequent after the use of ether. The ultimate death rate in the hospital and the number of deaths from postoperative pulmonary complications did not suggest that postoperative complications of any importance either early or remote were more frequent following either form of anaesthesia.

The patients usually preferred spinal anaesthesia, especially those who had previously experienced both forms. While there is some evidence to suggest that certain spinal cord changes may follow the injection of procaine hydrochloride into the subarachnoid space, it is still unknown whether such changes are common, permanent or of any special importance. The authors consider spinal anaesthesia to be as safe as ether and a great deal more convenient and helpful. It can be used more or less routinely for operations below the diaphragm and is the anaesthesia of choice in most acute abdominal emergencies.

GEORGE R. McAVILLY, M.D.

# PHYSICO-CHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Ruggieri E and Zanetti S. Experimental Researches on the Use of Thorotrast by the Intraperitoneal and Intrapleural Routes (Ricerche sperimentali sull'impiego del thorotrast per la intraperitoneale ed intrapleurica). *Ann. I. di Ch.* 1931 21 833

Ruggieri and Zanetti carried out a series of experiments on rabbits to check the results obtained by other investigators by the intraperitoneal and subcutaneous injection of thorotrast and to determine whether injections of this contrast medium into the pleural cavity might be of advantage. In addition they made histological studies to determine the effect of the injections on the major organs.

As a rule the intraperitoneal injection of thorotrast results in very clear visualization of the abdominal viscera. By means of it also the cavity lymphatic trunks are rendered visible although they are less distinct than the organs.

The viscera are rendered opaque by resorption of the contrast medium by the mesenchymal cells, of the reticulo-endothelial system, the investing cells of the serosa and the lymphatics. The first two of these groups of cells have a phagocytic action whereas the lymphatics seem to have a double function—direct absorption and transportation of cells infarcted with granules.

The authors found that when thorotrast was injected into the pleural cavity the pleuropulmonary lymphatics and the glands of the hilum were rendered visible. The absorption of the thorotrast granules is carried out by histiocytes and lymphatic elements. As in the peritoneal cavity the histiocytes seem to have a phagocytic function and the lymphatics an absorption and transportation function.

With regard to the elimination of thorotrast there is considerable difference of opinion. By many thorium is believed to be excreted through the liver and small intestine. Having found black granules in the kidneys the authors are of the opinion that these organs may be active in the process.

In their histological studies of the organs following the use of thorotrast the authors found that whether the thorotrast was injected by the intraperitoneal or the intrapleural route it produced notable organic changes. In the animals receiving intraperitoneal injections all of the organs examined showed vascular congestion changes were found in the hepatic cells, the kidneys showed severe lesions of the glomerular tubules, zones of atrophy were found in the suprarenals and the lungs contained numerous thromboses. In the animals receiving intrapleural injections all of the organs examined showed less

severe congestion, the kidneys presented distinct though less marked glomerular changes, the hepatic cells showed the same changes as those noted in the animals given intraperitoneal injections, signs of injury were apparent in the myocardial fibers and multiple thromboses were found in the lungs.

The intraperitoneal injections were made on three consecutive days with 1 c.c.m. of thorotrast diluted one half with a 5 per cent sterile glucose solution. The pleural injections were made with 1, 2 and 3 c.c.m. of thorotrast of different strengths. The optimum visibility was obtained with 2 c.c.m. and after about ten days.

JAMES T. CASE, M.D.

Bársony T. and Koppenstein E. The Roentgenologically Demonstrable Anatomical Cardia (Die röntgenologisch nachweisbare anatomische Cardia). *Arch. d. 1933* 21 131

The authors regard the new theories concerning the roentgenology of the normal cardia to be incorrect. They claim that the roentgen pictures which according to Jalugav show the mechanism of the normal cardia represent not the cardia but the intra-abdominal portion of the oesophagus. Roentgenographic demonstration of the normal cardia is impossible by our present means. However the cardia can be demonstrated under certain pathological conditions viz: (1) because of the oesophageal opening, (2) certain functional constrictions of the cardia and (3) certain postoperative changes in the stomach.

Martin H. E. Radiation Therapy in Skin Cancer. *Am. J. Cancer* 1933 15 60

Few technical difficulties are encountered in the treatment of skin cancers than in the treatment of neoplasms elsewhere. However the size of the lesions on the amount of infiltration, the irregularities of contour and the proximity of radiosensitive or vital structures may increase the difficulties and influence the choice of method.

While a lethal dose must be given to the depth of the lesion it is important to avoid injuring the structures just beneath to a degree beyond possible repair. This necessitates an accurate knowledge of the depth of infiltration, the physical principles of distance, filtration and voltage and the manner and extent to which these factors influence the intensity of the irradiation.

Martin recommends an initial massive dose delivered at one sitting. If this dose must be repeated or supplemented the original treatment was a partial failure. At the Memorial Hospital, New York the most commonly used applications in the treatment of skin lesions are radon plaques, an unfiltered radon bulb, gold seeds, X-rays, surface contact ap-

plicators and the radon tray. The use of the X rays is limited to the basal cell carcinoma with a large surface area (from 6 to 20 cm<sup>2</sup>). From 4 to 6 erythema doses (2500 to 3500 r units) are administered at a target skin distance of 20 cm with a voltage of 140 peak kv and an aluminum filter of 1 mm.

The radon plaques are shallow box shaped containers made of brass 1 mm thick. Into these containers radon in platinum tubes is placed. This gives a total filter equivalent to 3 mm of brass. The plaques are used on lesions varying from 0.5 to 3 cm in diameter. Elevated lesions should first be destroyed to the skin level by endothermy and then treated with from 1000 to 1500 mc hrs at a distance of 1 cm.

The use of gold seed is indicated especially for (1) small lesions on a surface with an irregular contour (2) small lesions near sensitive structures such as lesions on the palpebral margins of the eyelid (3) deeply infiltrating solid carcinoma recurring after surgical removal and (4) deeply infiltrating carcinoma of the lip. In the last condition the seed are used to supplement the surface contact irradiation.

The glass bulb is adapted only to institutions like the Memorial Hospital, New York. In the latter institution it is made up about once every three weeks. The bulb equipped with a long handle is made up with radon to the strength of from 300 to 500 mc. By its use small early basal cell cancers and precancerous lesions can be treated in rapid succession by one man. As the average dose is from 250 to 400 mc min and each lesion requires only from one to

two minutes from forty to fifty cases may be treated with one bulb. CHARLES H. HEACOCK, M.D.

# MISCELLANEOUS

Scharnagel I. M. The Treatment of Malignant Melanomata of the Skin and Vulva at the Radiumhemmet Stockholm. *Acta r d l* 1933, xi, 473.

Following a brief review of the literature on methods and results of treatment of malignant melanomata of the skin the author reports upon the seventy cases treated at Radiumhemmet in the period between January 1, 1921 and July 1, 1930. In all except six of the cases which were fatal the diagnosis of malignant melanoma was made by histological examination. Three of the patients had distant metastases and thirty three had metastases in the regional lymph nodes at the time of their admission to the hospital.

In forty five cases the treatment was electro-endothermy combined with irradiation in four cases electro-endothermy alone and in twenty-one irradiation alone. In the cases treated by irradiation alone the condition was inoperable or advanced.

The incidence of three year cure in the seventy cases was 45 per cent. In forty nine cases the incidence of five year cure was 38.7 per cent and in seventeen cases the incidence of ten year cure was 35 per cent.

The author concludes that the treatment of choice is the combined method and that operable metastases should be treated by dissection and irradiation.

# PHYSICO-CHEMICAL METHODS IN SURGERY

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though less marked glomerular changes, the hepatic  
cells showed the same changes as those noted in the  
animals given intraperitoneal injections signs of  
injury were apparent in the myocardial fibers and  
multiple thromboses were found in the lungs.

The intraperitoneal injections were made on three  
consecutive days with 1 c cm of thorotrast diluted  
one half with a 5 per cent sterile glucose solution.  
The pleural injections were made with 1 2 and 3  
c cm of thorotrast of different strengths. The  
optimum visibility was obtained with 2 c cm. and  
after about ten days.

JAMES T CASE MD

Bársony T and Koppenstein E The Roentgen  
ologically Demonstrable Anatomical Card a  
(De ro nt enol gisch s chb re anat musche K  
di) Ier ad f 933 xiv 335

The authors regard the new theories concerning  
the roentgenology of the normal cardia to be in-  
correct. They claim that the roentgen pictures  
which according to Palugyay show the mechanism  
of the normal eard a represent not the cardia but  
the intra abdominal portion of the oesophagus.  
Roentgenographic demonstration of the normal  
cardia is impossible by our present means. How-  
ever the cardia can be demonstrated under certain path-  
ological conditions viz (1) hernia of the oesophag-  
eal opening (2) certain functional constrictions  
of the cardia and (3) certain postoperative changes  
in the stomach.

Martin H E Radiation Therapy in Skin Cancer  
Am J Cancer 933 ix 65

Few technical difficulties are encountered in the  
treatment of skin cancers than in the treatment of  
neoplasms elsewhere. However the size of the le-  
sion the amount of infiltration the irregularities of  
contour and the proximity of radiosensitive or vital  
structures may increase the difficulties and influence  
the choice of method.

While a lethal dose must be given to the depth of  
the lesion it is important to avoid injuring the  
structures just beneath to a degree beyond possible  
repair. This necessitates an accurate knowledge of  
the depth of infiltration the physical principles of  
distance filtration and voltage and the manner and  
extent to which these factors influence the intensity  
of the irradiation.

Martin recommends an initial massive dose de-  
livered at one sitting. If this dose must be repeated  
or supplemented the original treatment was a par-  
tial failure. At the Memorial Hospital New York  
the most commonly used applications in the treat-  
ment of skin lesions are radon plaques an unfiltered  
radon bulb gold seeds X rays surface contact ap-

plicators and the radon tray. The use of the  $\gamma$  rays is limited to the basal cell carcinoma with a large surface area (from 6 to 20 cm<sup>2</sup>). From 4 to 6 erythema doses (2 500 to 3 500 r units) are administered at a target skin distance of 20 cm with a voltage of 140 peak kv and an aluminum filter of 1 mm.

The radon plaques are shallow box shaped containers made of brass 1 mm thick. Into these containers radon in platinum tubes is placed. This gives a total filter equivalent to 3 mm of brass. The plaques are used on lesions varying from 0.5 to 3 cm in diameter. Elevated lesions should first be destroyed to the skin level by endothermy and then treated with from 1 000 to 1 500 mc hrs at a distance of 1 cm.

The use of gold seeds is indicated especially for (1) small lesions on a surface with an irregular contour (2) small lesions near sensitive structures such as lesions on the palpebral margins of the eyelid (3) deeply infiltrating solid carcinoma recurring after surgical removal and (4) deeply infiltrating carcinoma of the lip. In the last condition the seed are used to supplement the surface contact irradiation.

The glass bulb is adapted only to institutions like the Memorial Hospital New York. In the latter institution it is made up about once every three weeks. The bulb equipped with a long handle is made up with radon to the strength of from 300 to 500 mc. By its use small early basal cell cancers and precancerous lesions can be treated in rapid succession by one man. As the average dose is from 250 to 400 mc min and each lesion requires only from one to

two minutes from forty to fifty cases may be treated with one bulb. CHARLES H. HEACOCK M.D.

### MISCELLANEOUS

Scharnagel I. M. The Treatment of Malignant Melanomata of the Skin and Vulva at the Radiumhemmet Stockholm. *Letsrad* 1 1933 21 473

Following a brief review of the literature on methods and results of treatment of malignant melanomata of the skin the author reports upon the seventy cases treated at Radiumhemmet in the period between January 1 1921 and July 1 1930. In all except six of the cases which were fatal the diagnosis of malignant melanoma was made by histological examination. Three of the patients had distant metastases and thirty three had metastases in the regional lymph nodes at the time of their admission to the hospital.

In forty five cases the treatment was electroendothermy combined with irradiation in four cases electroendothermy alone and in twenty-one irradiation alone. In the cases treated by irradiation alone the condition was inoperable or advanced.

The incidence of three year cure in the seventy cases was 45.7 per cent. In forty nine cases the incidence of five year cure was 38 per cent and in seventeen cases the incidence of ten year cure was 35 per cent.

The author concludes that the treatment of choice is the combined method and that operable metastases should be treated by dissection and irradiation.

# MISCELLANEOUS

## CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Kiewe L. The Question of Embryonal Injury as the Cause of Congenital Deformities and Diseases (1st Frage der Fruchtschädigung als Ursache angeborener Deformitäten und Krankheiten) Zbl. h. f. Hk. p. 64. 1933. 15. 0.

Injuries from insufficiency of the amniotic fluid are rarely demonstrable in the first embryonal period. The insufficiency is based on pathological processes which run the course in the ovum, fetus and fetal membranes. Kiewe has observed malformations and twin pregnancy in the same family ten times. He raises the question whether hydramnion and malformation are not similar and the result of a similar cause. The amniotic crowding and pressure of Munk Jensen are designated as factors believed to be responsible for all congenital malformations. The arguments against the mechanical explanations are summarized at the end of the first part of the article.

Among the strictly traumatic cause of injury of the embryo Kiewe mentions attempted abortion. Malformations due to ruptures of the placenta or loosening of the fetal membranes have been recognized. Kiewe attributes maternal impressions to circulatory contractions of the uterus or the hormonal chemical changes in the blood suggested by Bromann. He reports three cases of psychic trauma during the teratogenic termination period in which there were respective disturbances of the central nervous system: hypoplasia of the femur and congenital dislocation of the hip. He cites also a case of spastic hemiplegia and cataract following nephritis in the mother.

Syphilis is not regarded as of great importance in congenital deformities. Whether we are dealing with a general degenerative injury of the embryo or a specific disease remains undecided. The occurrence of X-ray and radium injuries of the embryo (central nervous and visual systems). X-ray children has been proved both by experimental studies and clinical experience. Kiewe warns against roentgenography of the lower spine and the pelvis during the first three months of pregnancy.

He next discusses embryonal injury due to factors of a non-mechanical nature. He states that ectopic pregnancy permits pathological changes to develop. Choledochal diseases are the result of affections of the uterus. They cause fault in implantation, disturbances of nutrition and chemical influences. Like the deformities of the embryo, insufficiency of amniotic fluid and anomalies of the amnion are to be regarded as the results of such conditions. Recently the importance of

oxygenation has been emphasized. Zangemeister refuses to regard endometrial changes as a factor in embryonal injury. With regard to this problem as well as with regard to actinic injury, an all or nothing point of view is not permissible. There are sufficient grounds for the assumption that before birth pathological influences may be manifested differently in the different organs undergoing development depending upon the phase of their development. Kiewe calls the teratogenic termination period the critical period of sensitivity.

In the third part of the article the author reports clinical observations made by himself and others. He considers them very inadequate as regards fetal disturbances caused by disease of the uterus. At any rate he considers the important influences on the embryo to be proved. The chief factors are abortions, curettage, unsuitable placental insertion, integrated uterine mucosa, the preclimacterium, late births following a long period of sterility, metabolic disturbances of the placenta due to maternal various congenital affections in the family and an abnormal course of pregnancy or labor in the same person or in relatives. Among social influences Kiewe includes only conditions which lead directly to abortion or embryonal injury. He regards attempts at abortion as a factor in the development of malformations (extraembryonic). The diffusion of medicaments early undernourishment of the embryo, a too short convalescent period during the puerperium appears to him to be responsible for the relatively high incidence of malformations in the children of laboring and rural populations. Gonorrhea as the primary affection must not be overlooked. The importance of the internal secretion of the endocrine glands is little understood. To explain chondrodysostosis Kiewe assumes that the genes for the cartilage formation were pathological. In conclusion he suggests that the aging ovary may yield primarily changed germ cells. H. LA. DWYER (Z)

Komosa A. The Hemostatic Effect of Intravenously Injected Hypertonic Sodium Chloride Solution (Die hämostatische Wirkung der intravenösen hypertensiven Kochsalzlösung) O. h. f. 1933. p. 0.

The experiment previously carried out with regard to the hemostatic effect of intravenously injected hypertonic sodium chloride solution was usually limited to determinations of the coagulation time and individual factors of the complicated process of coagulation not being considered. Therefore the author studied the problem with regard to the serum fibrinogen, thrombin content, blood calcium

cium sedimentation time of the erythrocytes number of white blood cells and number of thrombocytes.

The investigations were carried out on patients who were not bleeding and belonged to the group of neurasthenics by teneral persons and persons with ptosis of the stomach. From one to two days previous to the experiment as well as during the time of the investigations no drugs were given and during the first three hours of the investigation no food or drink was allowed. The relationship of the change in value of the individual factors of coagulation was also determined.

The results demonstrated definitely a haemostatic effect of intravenously injected hypertonic sodium chloride solution. Half an hour after the injection the coagulation time and bleeding time were shortened. The refraction of the serum (hyperæmia) fibrinogen plasma calcium number of erythrocytes and number of thrombocytes were diminished the thrombin content and apparently also the number of leucocytes showed an increase and the sedimentation time of the erythrocytes was unchanged. These phenomena began to disappear after one hour and the reaction was completed after three hours.

FAHRECKJELL (Z)

Newell R L Coccygeal Sinus *B I J S* 4 933

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Follows a discussion of the various theories regarding coccygeal sinus and a review of the symptoms histology etiology and treatment the author briefly reports eleven cases all those of women and draws the following conclusions:

1 Coccygeal sinus must be regarded as due to a defect in embryonic development. It is probably the result of traction on the skin caused by retrogression of the tail bud.

2 The treatment indicated is removal of the entire sinus together with that portion of the median raphe which contains the origin of the condition.

3 The extent of the sinus may be difficult to recognize without a careful examination preceded by the injection of lipodol.

4 The dissection is rendered easier by an injection of paraffin wax immediately prior to the operation.

C R STINKE MD

Furth J Selfbold H R and Rathbone R R Experimental Studies on Lymphomatosis of Mice *Am J C* 1933 5

Studies were made with five strains of lymphomatosis which developed spontaneously in three different stocks of mice. The strains were transmitted by cutting up in Locke's solution portions of lymph node spleen or lymphomatous tumor and making an incision directly into the groin or axilla for subcutaneous inoculation or filtering and injecting into the tail vein for intravenous transmission.

The necessity of successful transmission depended on 19 to 48 per cent depending on the strain used whether a subcutaneous or intravenous injection was done and whether or not the host was irradiated.

The strains all produced different varieties of lymphomatosis and preserved these differences through many successive animal passages. Strain A 35 produced a pronounced blood stream invasion—from 400,000 to 600,000 lymphatic leukaemia cell counts with no tendency to infiltrate or form tumors in the body organs. Strains S 27 and A 430 showed much less ability to invade the blood stream but frequently produced a moderate increase in the circulating lymphocytes in addition to local tumors and infiltrations. Another strain produced local gland infiltrations with tumor formation but very little blood stream invasion. The fifth strain produced systemic infiltrations—sometimes pleural or peritoneal effusions with scant involvement of the blood. The strains infiltrated particular organs that is produced tumors of the kidneys or ovaries infiltration of muscles or of the spinal cord or hemorrhagic tumors which characterized one or two strains and not the others.

Two strains could be transmitted to all stocks of mice whereas three could be transmitted only to mice which were closely related.

On the basis of these observations the authors suggest a simplification of the terms applied to these diseases. As the localization in lymph glands blood stream and other organs is not specific but depends on the character of the invading cell and free entrance into the circulation many different tumors represent different manifestations of the same process. The authors suggest the following use of the following terms:

Lymphoma for any tumor composed of lymphocytes. The terms lymphocytoma lymphosarcoma and leucosarcoma should be dropped. Lymphomatosis for the systemic disease now termed lymphatic leukaemia aleukaemic lymphadenosis and pseudoleukaemia.

Leukaemic subleukaemic and aleukaemic to represent respectively greatly increased moderately increased or scanty blood involvement different signs of the same disease lymphomatosis.

The smaller the inoculating dose the fewer the transmissions. The low point is about 1,000 lymphocytes injected intravenously. This number is necessary to reproduce the disease.

If plasma separated from the cell is injected no takes follow. Neither are there any takes when the cells are ground up a fact indicating the absence of an intracellular virus.

The transmissible material is killed by drying the addition of glycerin incubation and adequate freezing and thawing. These procedures fail to affect most viruses. The authors believe that the disease is transmitted directly by the injection of material containing only viable lymphocytes and is truly a neoplastic process. They therefore propose to drop the term lymphoblast and designate as leukaemic lymphocytes the cells which as invasive lymphocytes form metastases. These cells have limited powers of maturation and when they multiply their characteristics persist.



These attributes separate the disease from leucocytosis agranulocytosis granulocytopenia pernicious anemia and aplastic anemia. The authors believe that the term acute lymphatic leukemia which has been used by some to connote an infectious process should not be employed since according to their findings duration of illness is not a trustworthy index of differentiation of leukemia.

It is well known that irradiation injures the blood forming organs. It affects first the lymphatic system causing degeneration of the follicles in the spleen and lymph nodes and a decrease in the number of lymphocytes. X ray irradiation also increases the susceptibility of animals to transmissible lymphomatosis. If mice are irradiated soon after or before inoculation otherwise resistant strains may develop lymphomatosis. The authors believe that these two observations have little in common and that the influence of the X rays on susceptible animals does not have any relation to the therapeutic use of X ray irradiation in leukemia as the animals with leukemia are resistant to lymphomatosis.

The multiplication of leukemic cells cannot be prevented by sublethal doses of X ray irradiation. Irradiation with a sufficient number of units to destroy most of the lymphatic tissues did not and cause atrophy of the lymphatic cell when it prevented multiplication of leukemic cells. This fact suggests that normal lymphocytes are at least as susceptible to irradiation as malignant lymphocytes.

Treatment of inoculated mice by X ray irradiation prolongs the duration of the illness by from 2 to 50 per cent but does not prevent a fatal termination.

H. RAY C. S. T. STEIN, M.D.

Desjardins A. U. Radiotherapy as a Method of Identifying Certain Varieties of Tumor. *J. Am. Med. Ass.* 933 ci 75

Hitherto microscopic examination by a competent pathologist was the only means available whereby neoplasms could be identified accurately. This procedure is of great diagnostic aid. However the author believes that the average physician has come to rely too blindly and implicitly on the pathologist's report and tends to disregard significant physical, clinical and roentgenological data which conflict with the pathologist's interpretation and if analyzed would lead to a more accurate diagnosis than blind reliance on the pathologist's opinion.

The difficulties which the pathologist encounters are brought out. Being human he is subject to error. Commonly too much is expected of him. Moreover the tissue given him for examination may not be representative of the entire tumor.

Desjardins calls attention to the fact that there is now available another method for the identification and classification of certain varieties of neoplasms viz the reaction of these tumors to the roentgen rays and radium. While this method is not nearly so generally useful as the pathological

method within its own range it is as dependable as and sometimes more dependable than examination with the microscope. Desjardins emphasizes that it is effective and dependable only when it is used by an experienced radiologist.

It is based on the fact that each variety of cell in the body has a specific range of sensitivity to the roentgen rays or radium. Because of this fact the rate of regression of a tumor subjected to radiotherapy furnishes information as to the species of cells of which the tumor is chiefly composed.

Lymphoid cells are the most sensitive to irradiation, bone and nerve cells the least sensitive and epithelial cells about intermediate between these two groups.

In tumors derived from radiosensitive cells such as Hodgkin's disease, lymphatic or myelogenous leukemia, lymphosarcoma, embryonal carcinoma (often misnamed sarcoma) and mixed or teratoid tumor of the testis and chondrosarcoma of bone (osteosarcoma) can almost always be depended upon to furnish absolute diagnostic indications irrespective of clinical or pathological observations. By radiotherapy alone the radiologist can distinguish lymphoblastoma from tuberculous adenitis, embryonal carcinoma or a mixed (teratoid) tumor from tuberculous of the testis and diffuse endothelioma of bone from chondrosarcoma or a teratogenic tumor.

In other varieties of tumor radiotherapy may furnish information which correlated with clinical, physical and roentgenological data will determine the diagnosis without a biopsy or an abdominal laparotomy.

The author cites five cases to show the diagnostic value of radiotherapy. In the first case it proved the condition to be a lymphoblastoma although at operation both the surgeon and pathologist believed it to be a carcinoma. In the second, it established the diagnosis of abdominal lymphoblastoma after the patient had been unnecessarily subjected to an exploratory laparotomy. In the third case it established a similar diagnosis without operation in the presence of abdominal masses and chylous fluid in both pleural cavities. In the fourth case it differentiated mediastinal processes and in the fifth case it differentiated chondrosarcoma from diffuse endothelioma of bone.

Glaunow M. Immature Localized and De-structive Rhabdomyosarcoma. *J. Urol.* 933 1 318. *bergenzt. n. d. destrukt. d. wachse. d. Rhabd. m. bl. t. me.* F. H. J. Z. h. f. P. th. 933 1 318.

This article is of interest to gynecologists because the rhabdomyosarcoma developed in the uterus (nine of thirteen women with such a tumor were between thirty and sixty years of age) in the urinary bladder and in the ovum (in children up to the tenth year). Some of the tumors of this type belong to the myelomatous of Ehrlichsoff which are to be regarded as benign. However there are malign

nant rhabdomyomata with round cells polymorphic cells spindle cells and myxomatous and fibromatous varieties. The polymorphic variety was described by Montpellier as typical.

The malignant character of the rhabdomyoblastoma is apparent in the protoplasm especially in areas with a well-developed intercellular fibrillar substance. Heidenhain's iron-haematoxylin stain shows black chains transversely striated fibrils and nuclei with a granular reticulated structure. The spindle-shaped cells are frequently extremely long. The protoplasm is reticular and in stripes or cylinders and transversely striated. At times it is so extremely vacuolated that the fibrils appear to be hollow. In addition there are giant cells with single and multiple nuclei. During mitotic division the surfaces of the equatorial plates are vertical to the long axis of the cells. At times the fibrils are argentophile. The most important finding is the occurrence of myofibrils in various stages of differentiation.

Of the six tumors the histological structure of which is described by the author in detail two were myoblastomata (Abrikossoff). One was typical and the other atypical and immature. The typical tumor occurred on the tongue and the atypical tumor originated as a polyp of the vocal cord. The remaining four tumors were examples of more or less immature malignant rhabdomyoblastomata. Three developed on the lower extremities and one on the tongue.

Because of their variable character these tumors formerly escaped recognition. Some are dysontogenetic (Abrikossoff's cases) and some arise as regenerations of the transversely striated musculature usually on the surface of the muscles following trauma. The tumors in the region of the urogenital system are dysontogenetic. R. MEYER (C)

Rowland R. S. Schueller Christian Disease *Am J Roent* 1933 649

Sixty cases of Schueller Christian disease or Christian's syndrome of defects of membranous bones, exophthalmos and diabetes insipidus—a special form of xanthomatosis—have been recorded. The disease is a rare probably familial constitutional disorder of metabolism in which a deposition of lipid mixtures particularly cholesterol and its ester leads to characteristic hyperplastic changes in the reticuloendothelial or the histiocytic apparatus. Our knowledge of the metabolism and chemistry of the condition is incomplete. The suggestion has been made that the disturbance of equilibrium is in some way related to a disturbance of liver function. Pathological examination reveals first masses of foam cells or histiocytes loaded with fat in the tissues surrounding the small blood vessels and later lipoidal granuloma-like accumulations of a peculiar type which produce pressure atrophy or other pressure effect on the contiguous tissues.

As a rule three cardinal symptoms—bone defects, exophthalmos and diabetes insipidus—are present but no one of these is essential and there are others which sometimes seem to be of equal importance.

The most frequently observed form of the condition occurs in early childhood. Following one of the common childhood diseases convalescence is prolonged and characterized by increased irritability, excessive thirst, exophthalmos, soreness of the mouth with loosening of the teeth and vague pains referred to various parts of the body. On X-ray examination bone defects are found chiefly in the membranous and flat bones. The exophthalmos is the result of the accumulation of lipid granuloma in the orbits. The disease is progressive. Growth is arrested and emaciation occurs. Respiratory symptoms develop the child becomes cyanotic and dyspnoeic or very pale and anæmic. Frequently death results after from two to four years from respiratory and cardiac complications or severe anæmia.

In the occasional adolescent forms of the disease the bone defects, exophthalmos and diabetes are progressive but at times show remissions. Growth is arrested and the child becomes suddenly fat. The obesity has the characteristics of a dystrophia adiposogenitalis with signs of mental retardation. The disease may not prove fatal until the second or third decade of life.

In the rare adult form of the disease there may be a polyglandular syndrome characterized particularly by involvement of the hypophysis, tubercinæum and base of the brain. The fact that invasion of the lipoidal granulation tissue has been found in all of the glands of internal secretion suggests that the endocrine disturbances are the result of the lipodosis. In one case the hypophyseal calcification of Simmonds was observed and in others acromegaly with lipæmia and glycosuria.

Of chief importance from the roentgenological standpoint is the pressure atrophy of the bones. Roentgenograms reveal large and small areas of bone destruction or defects with sharply defined borders in the calvarium and in the base of the skull and involvement of the sella turcica, sinuses, orbit, mastoid and facial bones. The destructive changes have been compared to moth-eaten holes in a piece of flannel. Less extensive changes are found in the flat bones of the pelvis, scapulae, ribs and vertebrae and less frequently in the long and short bones. In the attempt at repair large areas of fibrosis and dense osteoid tissue are formed.

In conclusion the author states that the symptoms, endocrinological features and roentgenological findings seem to be the outcome of the general pathological changes produced by the excessive deposits of one or more of the lipid constituents in the tissues. J. EDWIN KIRKPATRICK, M.D.

Ga. K. G. E. Strategy in the Fight Against Cancer *P. C. R. Soc. Med. Lond.* 1933 x 60

After operations for carcinoma of the breast at St. Bartholomew's Hospital, London, the gross incidence of five-year survival was 36 per cent and the net incidence 40 per cent. The estimation of the gross incidence is based on the assumption that all

patients who have died or disappeared are dead from cancer. The percentage is therefore slightly too unfavorable. On the other hand, allowance must be made for deaths from accidents or intercurrent diseases. No attempt was made to separate the cases without enlargement of the glands or metastases from those in which metastases were present. The net incidence of five year survival was determined by making an allowance of 4 per cent.

In cases of carcinoma of the breast which were treated with radium, the gross five year survival was 33 per cent and the net five year survival 35 per cent.

Of the patients operated upon for carcinoma of the tongue 25 per cent and of those operated upon for carcinoma of the uterus 40 per cent were still alive at the end of five years.

To aid the organized fight against cancer the author suggests:

1. A complete survey of the results of the treatment of cancer made and maintained by follow up departments in all hospitals.
2. Cooperation between the various bodies interested in this fight.
3. A concerted effort on a large scale to investigate and report on various methods of treatment.
4. The dedication of one or more institutions to such an investigation.

Joseph K. N. A. R. M. D.  
 McGraw A. B. and Hartman F. W. The Present Status of the Biopsy. *J. Am. M. A.* 1933 93: 5.

The authors state that microscopic morphology still remains the best criterion of the histogenesis, classification, activity and prognosis of tumors. The value of biopsy has been recognized since the time of Virchow. The theory that incision into a malignant tumor stimulates its growth and may disseminate tumor cells has been disproved by experiments on animals and careful studies of clinical cases.

Biopsy should be used not as a substitute for other clinical diagnostic methods but as a supplement to them. In certain conditions such as syphilis, bone tumors, Ewing's sarcoma, a therapeutic test disease and lymphosarcoma a therapeutic test should be carried out before biopsy is considered for if there is a prompt response to such a test biopsy will be unnecessary.

The development of new instruments has greatly facilitated the technique of obtaining biopsy specimens. This is true particularly in the larynx, esophagus, urinary bladder and bowel. At the same time it has made the interpretation of material more difficult because of its limited amount and because often only the surface material is obtained and deeper structures are not represented. The needle biopsy of Hoffman is an easy method and the punch biopsy of Hoffman are easy methods of obtaining tissue from deep growths. The cautery loop may also be used for this purpose but care must be exercised not to disturb the tissues.

When the size, nature and location of the lesion permit its complete removal, such removal is preferable to biopsy. When a biopsy is done, some quick method of sectioning and staining should be used. The specimen should be fixed and a permanent section made. It is advisable to add a projection apparatus to the equipment so that sections can be demonstrated in the operating room to the entire surgical team.

Biopsy should never be done without some plan of treatment accepted in advance by the patient to be carried out in case the condition is found to be malignant.

CLARENCE C. REED, M.D.

Baumann J. Physicochemical Problems in Surgery. *Med. H. H.* 1933 pp. 656-693.

Physicochemical problems are of importance in both pre-operative and postoperative treatment. They are still unsolved in some respects. Further investigation in cooperation with physiologists and chemists is needed. The evaluation of methods is difficult. For example, in determinations of hydrogen ion concentration, not only is considerable error possible and not taken into consideration. Until recently the permissible margin of error was assumed to be about 0.12 pH. Today it is only 0.02 pH. In 1929 Reimers found that determination of the pH of whole blood with the quinhydrone method varied by an average of 0.19 pH. Hydron methods made with the hydrogen electrode method. The maximal variation was 0.35 pH from determinations made with the quinhydrone method. The surgeon is interested especially in the base equilibrium of the tissue decomposition.

The surgeon is interested especially in the base equilibrium of the products of tissue decomposition. The content of the products of tissue decomposition and protein fractions in the blood. In every operation the metabolism tends toward acidosis as acidosis is produced by the tissue breakdown in the operative wound. All general oxidative processes are depressed by the narcosis and the respiratory regulation of the acid base equilibrium is inhibited by the depressing influence of the narcosis on the respiratory centers. The reaction of the blood is shifted over toward acidity and the hydrogen ion concentration is increased in direct proportion to the decrease in the alkali reserve. However, if the kidneys are functioning effectively conditions are restored to normal within twenty-four hours after the operation. When the kidneys and the circulation are normal the acidosis is changed within twenty-four hours or at the latest within forty-eight hours to a definite alkalosis with susceptibility to pascim. However, the significance of postoperative acidosis has been generally overestimated as it has been thought that patients with pre-operative acidosis of the acid base equilibrium toward the acid side lack resistance and acidosis. This is incorrect. The operation well as acidosis. This is incorrect. The poor resistance of patients with carcinoma has been ascribed to acidosis but in the cases of 64 carcinoma patients Baumann was able to demonstrate a distinct shift of the blood reaction toward the alkali.

line side with an accompanying decrease in the alkali reserve and the postoperative acidosis disappeared as quickly as in other patients. Even patients with liver injury are no more endangered by postoperative acidosis than others.

In severe diabetes and Basedow's disease there is a pronounced tendency toward acidosis. In the latter the acidosis can be decreased by the avoidance of ether narcosis. However, Baumann advises against the use of local anesthesia as the postoperative acidosis following it is not much less marked than that following general anesthesia and there is the additional danger of psychic shock. We need a general narcosis for cases in which ether narcosis is not advisable. No special advantages can be claimed for avertin or narcotics injected intravenously. Especially in avertin narcosis the respiratory regulation of the blood reaction is more disturbed than in ether narcosis. Nitrous oxide is still more dangerous in this respect. The author cites the figures of Van Slyke on carbon dioxide which indicate that the limits of the hydrogen ion concentration of the blood compatible with life extend over on the acid side as far as pH 7.0. Of great importance is the disturbance of carbohydrate metabolism but whether or not this is dependent on the postoperative acidosis is as yet undetermined. The following facts have been demonstrated:

1. After severe operations on the stomach or liver the blood sugar may rise from the normal of from 80 to 90 mgm to 180 mgm per 100 ccm and the increase may outlast the acidosis.

2. In cases of very severe liver injury the fasting blood sugar may be subnormal and even as the result of operation may never rise once to high normal values.

Under the latter circumstances there is great danger. Immediate intravenous rectal and subcutaneous injections of dextrose are indicated to save life. In cases of diabetes such injections must always be given in addition to injections of insulin. Of 600 cases Baumann demonstrated a postoperative increase in the blood sugar in 90. Next to cases of liver damage postoperative hypoglycemia is to be feared most in cases of Basedow's disease.

With regard to products of metabolism in the blood following operation the author says that undue lactic acid production in ether narcosis may be prevented by giving oxygen with the ether. Buerger and Crahan demonstrated an increase in the residual nitrogen in the blood. Baumann found this increase especially marked in advanced liver degeneration and necrosis of the pancreas. In renal disease the protracted elevation of the non-protein nitrogen values after operation is associated with a protracted decrease in the alkali reserve. A relationship between postoperative thrombosis and embolism to changes in the individual fractions of the protein bodies in the blood serum has been assumed but up to the present time none of the methods employed in the study of the problem has been found dependable. Baumann determined the pre-

operative and postoperative fibrinogen content of 800 samples of blood plasma by a method with a margin of error of only from 1 to 2 per cent. As early as twenty-four hours after operation and during the next few days the fibrinogen content occasionally rose from the normal value of from 250 to 400 mgm to well over 1,000 mgm per 100 ccm. In agreement with Starlinger, Baumann found that the liver does not play the part in the formation of fibrinogen which because of incorrect methods of study has been ascribed to it. In cases of severe icterus he noted a marked increase in the fibrinogen content even in the absence of infection. At any rate disturbances in the coagulation of the blood in cases of liver injury cannot be ascribed to a lowering of the fibrinogen content. Whether the heparin of the blood is responsible remains to be determined. In a recent review of the tests of liver function Umber criticized these tests adversely. He believes that only the tests based on the carbohydrate metabolism are of importance in the determination of indications for operation. However, as a sufficient store of glycogen is known to be of importance for the other functions of the liver, dextrose and insulin should be given in every case in which an operation involving the liver or biliary passages is performed and in the pre-operative and postoperative treatment in every case in which liver damage is suspected.

The metabolic disturbances occurring in ileus have never been adequately explained (loss of important electrolytic secretions of the gastric and duodenal juice, liver and pancreas or severe intoxication due to accumulated intestinal products or inundation of the body with trypsin). The author recommends evacuation of the intestine during the course of the operation by the method and apparatus of Klapp. He cites his researches on trypsin in cases of acute necrosis of the pancreas and the diagnostic determination of diastase in the urine. He rejects the unbuffered Wohlgemuth method. He calls attention to the fact that in 1929 he emphasized that for accuracy of the diastase test it is necessary to see that the reaction of the test fluids is optimal for diastase and that the diastase negative cases are those in which the test was made with the old method.

FRANZ (Z)

#### DUCTLESS GLANDS

Golden, R. and Abbott, H. The Relation of the Thyroid, the Adrenals, and the Islands of Langerhans to Malacic Diseases of Bone. *J. R. Ig. of* 933 xxx 64.

After a comprehensive survey of the literature on the relation of the thyroid, the adrenals, and the islands of Langerhans to malacic disease of bone and a critical review of the cases studied in the Department of Medicine of the College of Physicians and Surgeons of Columbia University and in the Roentgen Ray Department of the Presbyterian Hospital, New York, the authors present the following conclusions:

Hyperthyroidism produces an abnormal elimination of calcium the mechanism of which is not understood. The comparative decalcification of the bones demonstrable in the roentgenogram is so slight as to be of little if any importance. Its appearance is not characteristic of thyrotoxicosis.

Hypothyroidism in adults is apparently associated with no greater incidence of decalcification of bones than that which might be encountered in any group of patients of the same age.

Although adrenal secretion influences calcium metabolism either directly or indirectly and although the adrenals may be indirectly involved in a pluriglandular imbalance in certain cases of osteomalacia the evidence does not seem to justify the assumption that decalcification of the bones results directly from adrenal disease or dysfunction.

Calcium metabolism is intimately related to carbohydrate metabolism. In the cases of diabetic adults roentgen evidence of definite important skeletal decalcification which can be attributed directly to the disease is lacking. In the cases of diabetic children roentgen examination occasionally reveals decalcification of the bones which is probably due to acidosis or malnutrition or both.

In conclusion the authors state that the evidence at hand indicates that skeletal decalcification to a degree sufficient to be of differential diagnostic importance in the roentgenogram and attributable to the endocrine disturbance may be encountered in hyperthyroidism but is not found in hypothyroidism disease of the adrenals or diabetes in adults.

J. EDWIN ELLIOTT, M.D.

Ballin, M. Parathyroidism. Its Clinical Symptomatology. *Am J Roentgenol* 1933 xxx 571.

When a parathyroid gland is irritated by hyperplasia or an adenoma an increase occurs in the quantity of parathormone secreted into the circulation. This results in an increase in the calcium and a decrease in the phosphorus in the blood serum. The source of the calcium for the hypercalcemia is the skeleton. In addition to the changes in the calcium and phosphorus content of the blood serum and the demineralization of the bones there are changes in the tone of the muscles. The tone is reduced and the period between the stimulus and the contraction is increased. These changes are manifested by lassitude, fatigability and frequent fall without cause. At points of irritation secondary deposits of calcium salts occur. The most common sites of such deposits are the vertebral laminae, the intervertebral disks, the blood vessels and internal organs. The secondary deposits of calcium and the hypercalcemia cause gastrointestinal symptoms such as vomiting, urinary symptoms such as albuminuria and stone formation.

No one symptom is pathognomonic. Changes in the bones demonstrable on roentgen ray examination may be absent but their absence does not exclude the diagnosis of parathyroidism. In the more chronic cases the increase in the calcium content and

decrease in the phosphorus content of the blood serum may be temporarily absent or very slight.

Medical treatment is of no avail. By some roentgen treatment has been found successful and by others unsuccessful. If roentgen treatment fails operative removal of the adenoma or hyperplastic tissue is indicated. The results of operation are excellent. As postoperative tetany must be guarded against not more than two glands should be removed at one time. If the symptoms require the removal of more parathyroid tissue this should be done at a second operation.

CHARLES H. HEACOCK, M.D.

Morse, P. F. Parathyroidism. Its Pathological and Etiological Classification. *Am J Roentgenol* 1933 xxx 578.

Morse discusses osteogenesis imperfecta, fragilitas ossium, rickets, osteomalacia, renal rickets, osteitis fibrosa, osteitis deformans, leontiasis osseum, giant cell tumors, the ankylosing polyarthritides of Oppel and multiple myelomata and classifies them into six groups according to the primary defect of metabolism.

In the first group he places the diseases in which there is a defect of the mesoblastic tissues through out the body and as a result the connective tissue framework for bone forming is lacking. Osteogenesis imperfecta (in children) and fragilitas osseum (in adults) fall into this group. There is no defect in calcium metabolism.

In conditions of the second group the fault is in calcium absorption or fixation. The intake of calcium in the food or the intake of vitamin D or both are inadequate. Rickets (in children) and osteomalacia (in adults) belong in this group. Again there is no elevation of the blood-calcium level.

In the third group are placed certain conditions in which there is an increased excretion of calcium resulting in demineralization of the bones but no disturbance of the parathyroids. Examples are the malacia seen in exophthalmic goiter, pancreatic diabetes and basophilic adenomata of the pituitary gland.

The only disease in the fourth group is renal rickets. As a result of the nephritis there is retention of phosphorus. This causes hyperplasia of the parathyroids which in turn causes hypercalcemia and decalcification of the bone.

In the next group are placed several diseases that do not properly belong in this discussion but in which the bones suffer as a result of erosion from the growth of abdominal tissues. In this group are Schueller-Christian disease, Gaucher's disease, Niemann-Pick disease and Hodgkin's disease.

In the last group are placed all the diseases which are believed at the present time to be due to primary parathyroidism. In this group belong osteitis fibrosa cystica, osteitis deformans (Paget's disease), leontiasis osseum, the ankylosing polyarthritides of Oppel and probably giant-cell tumors and multiple myeloma.

CHARLES H. HEACOCK, M.D.

Lockwood J L and Hartman F A The Relation of the Adrenal Cortex to Vitamins A B and C *E docri of gy* 1933 1 501

Tests were made on animals to determine the influence of extracts of adrenal cortex on the effects of a deficiency of Vitamins A B<sub>1</sub> and C respectively. The experiments with regard to Vitamins A and B<sub>1</sub> were made on rats and those with regard to Vitamin C on guinea pigs.

When administered by mouth the cortical extract gave no protection against the effects of a deficiency of Vitamins C and B<sub>1</sub>. When injected intraperitoneally it improved the growth curve and scurvy score in the animals with a deficiency of Vitamin C and improved the growth curve and delayed the onset of symptoms of deficiency of Vitamin B<sub>1</sub> but had no influence on the effects of a deficiency of Vitamin A.

The weight of the adrenals showed hypertrophy of these glands in animals with a deficiency of Vitamins C and B and atrophy in animals with a deficiency of Vitamin A. After unilateral adrenalectomy on animals with a deficiency of Vitamin C the activity of the remaining adrenal as measured by its influence on the onset of scurvy increased to a degree greater than that noted in animals with two normal adrenals.

The injection of cortical extract containing cortin delayed the onset of symptoms in deficiency of Vitamins C and B<sub>1</sub> but had no influence on the symptoms of deficiency of Vitamin A. Either cortin or some unidentified substance must be responsible for this effect. As this substance must aid in the utilization of Vitamins C and B<sub>1</sub> the authors suggest that an ample supply of these vitamins

might be advantageous in deficiency of the adrenal cortex  
J FRANK DOUGHTY M D

Scott W J M Bradford W L Hartman F A and McCoy O R The Influence of Adrenal Cortex Extract on the Resistance to Certain Infections and Intoxications *Endoc in l gy* 1933 xvii 529

The administration of an extract of adrenal cortex has been shown to increase the resistance to infection of animals whose adrenals have been removed. The authors report experiments which they carried out to determine whether it will have a similar effect when the adrenal glands are intact. Experiments were made on guinea pigs with diphtheria toxin on rats with *trypanosoma equiperdum* and on mice with the pneumococcus.

It was found that the administration of cortical extract three times daily gave no protection against the minimal lethal dose of diphtheria toxin given in a single injection or repeated fractional doses did not prolong the life of rats infected with the *trypanosoma equiperdum* and did not have any appreciable effect on the survival of mice infected with the pneumococcus.

The authors conclude that until some objective method is devised to show increased resistance to chronic bacterial intoxication the administration of extract of adrenal cortex to increase resistance to infection in clinical cases is not warranted. Specifically the evidence does not indicate that any benefit is to be expected from cortical extract in acute or subacute diphtheria intoxication at least not unless the extract is given in tremendous doses.

CLARENCE C REED M D

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NOTE--THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

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# International Abstract of Surgery

*Supplementary to*  
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# INTERNATIONAL ABSTRACT OF SURGERY

APRIL 1934

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

Friez P. Habitual Dislocation of the Temporomaxillary Joint Without Flattening of the Jaw  
(Les lésions habituelles sans blocage de l'articulation temporo-maxillaire) Thesis of Paris. Abst  
by Puppe *Presse méd* P 933 xl 1916

Habitual dislocation of the temporomaxillary joint without flattening of the jaw occurs most frequently in young persons particularly girls. It is probably due fundamentally to laxity of the ligaments and the joint capsule and possibly also to intra articular malformations. Particularly after traumatism it may be accompanied by crepitations and pain. The condyles may become dislocated on one or both sides but are returned to the glenoid fossa without difficulty.

As the condition is relatively benign the treatment should be simple consisting of such measures as the wearing of an elastic support for a considerable period of time or intra muscular injections of alcohol.

M. R. W. POOLE M.D.

### EYE

Lagrange H. The Diagnosis of Iridociliary Tuberculosis  
cul I B *J Ophth* 933 69

Although early in estigators considered iridociliary tuberculosis a primary infection it is now generally believed to be always secondary. Therefore the presence of a primary focus must be demonstrated before such a diagnosis can be made. A primary infection can often be found in the chest. There is frequently a history of repeated attacks of pleurisy and in many cases carefully made roentgenograms will reveal evidences of tuberculosis. Inflammation of the heart may disclose evidence of the presence of a remote focus. The typical findings are tachycardia, mitral regurgitation, blood pressure hypotension, etc. which demonstrate and is suggestive. The presence of tuberculosis in the digestive tract, bones, joints or lymphatic system should be in-

vestigated. Various newer immunological tests are mentioned.

SAMUEL A. DUKER M.D.

Woods A. C. and Burky E. L. The Possible Influence of Immunological Factors in the Production of Cataract. *J Ophth* 1933 xvi 957

Lens protein consists of at least three different proteins exclusive of the capsule and is whole organ specific rather than species specific. The alpha fraction has the strongest reactions and these are inhibited by the presence of the other fractions. The possibility of cataract production by immunological procedure is controversial. It has been seen only in the young of treated mothers possibly because the embryonic lens capsule is more permeable.

A small percentage of cataractous individuals may be hypersensitive to lens protein before operation. After operations involving capsulotomy a larger percentage develop a cutaneous sensitivity to lens protein presumably from the sensitizing effect of their own lens protein. No definite statement can be made as yet with regard to the possibility of physicochemical or immunological factors in the etiology of senile cataract.

SAMUEL A. DUKER M.D.

### NOSE AND SINUSES

Well W. A. Nasal Papilloma With the Report of a Case With an Enormous Nasopharyngeal Extension. *Lancet* p 1913 xl 98

The author states that papilloma of the nose is extremely rare not more than 100 authentic cases having been reported in the literature to date. From his study he concludes that many tumors reported as papillomata cannot be classified as such. In the true papilloma the cells are of normal type and there is a sharp demarcation between the fibrous and epithelial elements. Clinically nasal papillomata are of two distinct types (1) those of the cribulohypophyseal type which are generally single and circumscribed and (2) papillomata situated deep in the fossa and in olving the sinuses which are generally



multiple Nasal papillomata cannot be classified definitely as either benign or malignant they are intermediate. In the author's opinion those of the deep type always contain the seed of malignancy.

Wells reports the case of a man seventy years of age who had had a nasal papilloma for twelve years. The diagnosis was made by biopsy and on removal the tumor was found to arise from the ethmoid area. The antrum was probably also involved. X-ray irradiation before removal did not result in any appreciable diminution in the size of the tumor but because of the fibrosis resulting from it the bleeding which occurred at the time the neoplasm was removed was much less than that occurring at the time of the biopsy. The author believes that X-ray treatment is beneficial and indicated in all cases.

JAMES C. BRASWELL, M.D.

### MOUTH

Nicolini R. G. Treatment of Cancer of the Tongue (Tratamiento del cancer de la lengua) *Semin a med* 1933 xl 973

Nicolini reviews a series of forty three consecutive cases of cancer of the tongue from the clinic of Arce. In 60 per cent the location of the lesion was anterior dorsolingual in 20 per cent posterior dorsolingual and in 20 per cent infralingual. From 10 to 20 per cent of the lesions were in the early operable stage of limited growth from 22 to 24 per cent were infiltrating and near the limit of operability and from 64 to 66 per cent were advanced and inoperable.

Clinically demonstrable adenopathy was present in 74 per cent of the cases of dorsolingual growths 91 per cent of those of posterior dorsolingual growths and 89 per cent of those of infralingual growths. It was bilateral in 26 per cent of the first group 36 per cent of those of the second and 44 per cent of those of the third.

Surgical treatment of cancer of the tongue must be radical. The extirpation should extend well beyond the limits of the disease and should be done with the electric cautery knife. Three routes of approach are employed the oral the suprahyoid and the transmaxillary. The route through the mouth is used most commonly. When the exposure by this route is insufficient an incision may be made into the cheek. The lateral suprahyoid approach through the floor of the mouth may extend into the pharynx. This route of approach greatly facilitates removal of the involved glands. The transmaxillary route is employed only in extensive cases especially those with involvement of the regional buccal or pharyngeal mucosa.

Local anesthesia with preliminary hypodermic narcosis is usually sufficient for the operation.

After the operation large doses of radium and X-ray irradiation should be given. Even in cases of extensive lesions radium irradiation cannot compete with proper local operation performed with the electric cautery knife supplemented with block

dissection of the regional glands. Radium irradiation alone cannot accomplish as much as surgery and radium irradiation together when the disease has not reached a hopeless stage of infiltration.

Of the forty three patients whose cases are reviewed by the author four received no treatment and four were given only palliative treatment. Of the 35 given curative treatment eight who were treated between the years from 1920 to 1926 and four who were treated in 1928 are now well. One patient has been free from recurrence for over a year. Five patients died and fourteen cannot be traced.

WILLIAM R. MEYER, M.D.

### PHARYNX

Salinger S. and Pearlman, S. J. Hemorrhage from Pharyngeal and Peritonsillar Abscesses. Report of Cases a Résumé of the Literature and a Discussion of Ligation of the Carotid Artery. *Arch Otolaryngol* 1933 xvi 454

The authors report 10 cases of severe spontaneous hemorrhage due to throat infection. In 4 cases ligation of the common carotid artery was done and recovery resulted. In the 6 others all of which were fatal carotid ligation was not done.

Infection of the parapharyngeal spaces is usually blood borne through thrombosed veins leading from the tonsillar plexus to the tissues external to the middle constrictor muscle. From there the infection may spread to the submandibular gland the carotid sheath and the parotid spaces. Such a spread was found in many of 227 cases coming to autopsy. Of 90 cases in this group involvement of the internal carotid artery was found in 49 erosion of the external carotid artery in 4 erosion of the common carotid artery in 9 and involvement of other vessels in 14. There were 6 deaths due to erosion of the arteries. These findings demonstrate the advisability of early ligation other less drastic measures being ineffectual.

In an effort to determine the dangers of ligation of the common carotid artery the authors reviewed the literature of the past century. They concluded that 25 per cent of all ligations of the common carotid artery regardless of the patient's age or ailment are accompanied by serious cranial complications at least one half of which prove fatal. However since other factors such as sepsis shock and acute anemia account for a certain number of the fatalities they believe that in cases of serious or recurring hemorrhages the dangers of ligation are less than those of non intervention.

JAMES C. BRASWELL, M.D.

### NECK

Bailey H. The Clinical Aspects of Branchial Fistulae. *Brit J S* 1933 xii 173

After a discussion of the various thrones and symptoms of branchial fistulae Bailey describes the technique of complete extirpation of the tract. Lipiodol is first injected into the fistula and the ex-

ternal opening closed by a pursestring suture. The skin is then incised and the fistula freed as high as possible through this opening. Another incision is then made higher up in the neck and by undermining the skin the tract is brought out through the second incision. This allows better exposure for complete extirpation of the fistula. The author calls attention to the fact that frequently the vagus nerve is adherent to the wall of the tract.

SAMUEL PERLOW, M.D.

Greene E. I. and Greene J. M. The Validity of Present Criteria for the Diagnosis of Carotid Body Tumor. *Am J Surg* 1933 2: 521

The authors have found 196 cases of tumor of the carotid body reported in the literature. Because of the rarity of the condition a correct pre-operative diagnosis was made in only 20.

During the past twenty five years the frequency of diagnosis has increased. According to the studies of Keen, Bevan and Rankin the tumor occurs in the region of the bifurcation of the carotid artery at first under the border of the sternocleidomastoid muscle. It is slightly movable from side to side but not up and down in a vertical direction in which the patient has a sensation of pulsation and an up and down (non-expandable) pulsation transmitted from the artery can be felt. When the patient first seeks treatment the tumor is of long standing and varies in size from that of a hazelnut to that of a hen's egg. There is no complaint of pain and the tumor is not tender.

The authors report a case of branchial cyst mistaken for a tumor of the carotid body. The patient who was twenty four years old complained of a painless non tender mass in the neck of four months duration. Soon after its discovery (it was first noted by a relative) the mass grew rapidly for a month. When it reached the size of a hen's egg it remained practically stationary. It was on the right side in the region of the bifurcation of the carotid about one and a half inches with the upper border of the thyroid cartilage and was partly covered by the sternocleidomastoid muscle. Its posterior portion was underneath the muscle. The skin over it was unchanged and freely movable. The tumor was oval smooth firm and elastic and showed no evidence of fluctuation. It was freely movable from side to side but immovable up and down. There was a distinct transmitted but non-expandable pulsation but no thrill or bruit. There were no other palpable glands in the neck. The right pupil was smaller than the left and pressure on the tumor promptly dilated it. In addition the phenomenon of hippus was noted. This was observed particularly when a strong light was thrown into the eyes when a rapid rhythmic contraction and dilatation of the pupil occurred. The general physical examination and the laboratory tests were otherwise negative.

Operation was performed under local anesthesia. On exposure the tumor was found to be grayish brown and elastic and to have a thick capsule. It

was adherent to the surrounding structures and intimately attached to the carotid artery. When it was completely shelled out it was found to be a branchiogenic cyst filled with a yellowish brown soft thick liquid material showing large quantities of cholesterol in the form of crystals. The wall of the cyst was lined with thick squamous epithelium with papillary projections.

A pre-operative differential diagnosis between branchial cyst and tumor of the carotid body is of great importance as the removal of branchial cysts is comparatively easy whereas the removal of a carotid body tumor is difficult. The difference in the mortality and morbidity in the two conditions is also striking. The authors suggest aspirating the contents of the tumor through an 18 gauge needle. If the tumor is cystic and the contents show cholesterol crystals a diagnosis of branchial tumor is established. After aspiration of the cyst an opaque substance may be injected and a roentgenogram made. If the tumor is solid material may sometimes be aspirated for biopsy.

G. PAUL LAROCHE, M.D.

Pflueger O. H. The Treatment of Neck Glands in Cancer of the Lip Tongue and Mouth. *Col for a & West Med* 1933 22: 391

The first undertaking of the Cancer Commission of the California Medical Association was a survey to determine the opinions of authorities regarding the diagnosis and treatment of cancer.

With regard to the treatment of the lymph node area in cases of lip and intra-oral epithelioma a considerable difference of opinion was found. With regard to the treatment of the primary lesion it was possible to reach agreement by suggesting alternate acceptable methods those preferring one method agreeing nevertheless that other methods are acceptable. Agreement was reached also with regard to the care of palpable lymph node metastases the consensus of opinion being that adequate surgical removal together with irradiation is the procedure of choice when the glands are operable. However with regard to whether dissection of the neck should be performed in the absence of palpable glandular metastases agreement could not be reached.

One group of authorities maintained that in cancer sufficiently advanced to suggest the presence of metastases for example lip cancer in which invasion has reached the underlying muscle the gland bearing area should always be cleaned out surgically even when no glands can be felt while another group were equally certain that prophylactic irradiation of the lymph node area with careful observation of the patient and dissection of the neck if a node becomes palpable will give equally good results.

In the face of such an irreconcilable difference of opinion the Commission undertook to ascertain the present-day practice of cancer authorities throughout the world. This article is based on the replies to forty questionnaires sent to surgeons radiologists dermatologists and cancer clinics in Europe and America.

These replies show that there is disagreement throughout the world although there is now a definite leaning toward conservatism in the absence of palpable glands

#### CANCER OF THE LIP

*1 Glands not palpable a* In cancer of the lip of a size or duration or showing microscopic evidence of deep invasion sufficient to suggest the possibility of metastasis two-thirds of those replying to the questionnaire do not perform a routine dissection of the lymph glands (twenty versus ten). In other words two-thirds maintain a conservative attitude.

*b* Of the group which maintain a conservative attitude approximately two-third give prophylactic irradiation to the cervical glands (fourteen versus six). This is done either by x-ray irradiation or the use of radium packs or both.

*c* Of those who perform routine dissections of the cervical glands prophylactic irradiation is given by practically none. However it is given by some if microscopic evidence of glandular involvement is found.

*d* The operation most commonly performed when the glands are not palpable is a bilateral suprathyroid dissection. If glandular involvement is found on microscopic examination the dissection is carried out farther in some instances.

*2 Glands palpable a* In cases of cancer of the lip in which the glands are palpable and operable (movable, hard and not involving both sides to the clavicle) the neck is dissected by far the greater number of the surgeons. Only two of those replying to the questionnaire depend entirely on irradiation in the treatment of glands involved by metastasis.

*b* Irradiation in some form is usually given. Only 6 of the authorities replying to the questionnaire give no irradiation whatever if the glands have been completely removed. Irradiation is divided about equally into postoperative irradiation alone and combined pre-operative and postoperative irradiation. Only four of the authorities questioned limit themselves to pre-operative irradiation.

*c* Two of those replying to the questionnaire stated that they perform a dissection if the gland does not disappear following irradiation.

*d* Slightly more than one third of those questioned attempt to distinguish between hard (metastatic) and soft (inflammatory) glands and withhold surgical dissection if the glands are believed to be merely inflamed.

#### CANCER OF THE TONGUE

*1 Glands not palpable a* In cases of cancer of the tongue in which early metastatic involvement is suspected approximately two-thirds of those replying to the questionnaire do not perform a dissection of the cervical glands when none of the glands is palpable (nineteen versus eleven).

*b* Of those not doing a routine dissection almost all give irradiation to the lymph gland area (fifteen versus one). Three give irradiation sometimes.

*c* Of those who do a routine dissection about half give prophylactic irradiation to the neck (six versus five).

*d* The most common operation is unilateral block dissection to the clavicle. However some surgeons perform a bilateral block dissection and others a unilateral block dissection with suprathyroid dissection on the other side.

*2 Glands palpable a* In cases of cancer of the tongue in which the glands are palpable and operable by far the greater number of those replying to the questionnaire perform a neck dissection. Only three depend entirely on irradiation for treatment of metastatic cancer of the cervical glands.

*b* Practically all give irradiation of some type when surgery is done for palpable glands. Only four give no irradiation when operable glands are completely removed.

*c* Approximately one half of those giving irradiation limit themselves to postoperative irradiation. The others use both pre-operative and post-operative irradiation. Only three limit themselves to pre-operative irradiation.

*d* Two-thirds make no distinction between hard and soft glands.

#### CANCER OF THE BUCCAL MUCOUS MEMBRANE

*1 Glands not palpable a* In cases of cancer of the buccal mucous membrane of sufficient size and duration to suggest metastasis to the cervical glands three-fourths of those replying to the questionnaire do not dissect the neck when the glands are not palpable (twenty-two versus seven).

*b* Of those who do not perform routine cervical dissection the majority give prophylactic irradiation (nineteen versus three).

*c* When routine dissection is performed prophylactic irradiation is usually not given.

*d* The operation usually performed is a unilateral block dissection but about 30 per cent of those replying to the questionnaire limit themselves to the upper cervical glands.

*2 Glands palpable a* In cases of cancer of the buccal mucosa which is operable and in which palpable glands are present the greater number of those replying to the questionnaire perform a neck dissection only three depending entirely on irradiation.

*b* When operation is performed for palpable operable glands most of those questioned give irradiation in some form as part of the treatment. Only four do not use irradiation.

*c* The type of irradiation is equally divided between postoperative irradiation alone and a combined pre-operative and postoperative irradiation. Three limit themselves to pre-operative irradiation.

JOSEPH K. N. & R. M.D.

Cattell R. B. Thyroid Disorders in Childhood  
New Engla J M d 933 ccix 867

In regions where goiter is endemic disorders of the thyroid in childhood are common and without proper treatment become serious. Approximately 1

per cent of the patients with thyroid disorders who come to the Lahey Clinic Boston are children under thirteen years of age. In many respects the conditions presented by these children are similar to those presented by adults. They differ however in the fact that they represent arrests and changes occurring in embryological development delayed growth and mental retardation rather than degenerative changes.

Thyroid disorders in infancy and childhood may be roughly divided into those that are of developmental origin those that are functional and those of a neoplastic type. The author suggests the following general classification: (1) developmental disorders (2) cretinism (3) colloid or endemic goiter (4) hyperthyroidism (5) inflammation and (6) tumors.

It is commonly accepted that thyroglossal cysts sinuses and fistulae are more frequent in infancy and childhood because they are of developmental origin but of more than eighty patients treated for these conditions at the Lahey Clinic only 14 per cent were under twenty years of age. Of three children under ten years of age and seven under twenty years of age who were operated upon only one developed a recurrence.

Colloid goiter is the most frequent disorder of the thyroid in children. Therefore every physician dealing with children should be able to give advice concerning it. Children of goitrous parents seem to have a predisposition to this form of thyroid enlargement.

In regions where colloid goiter is endemic the administration of small amounts of iodine is a very effective method of preventing the condition but the author believes that in regions where colloid goiter is not frequent the administration of iodine as a general practice is not to be recommended as a well balanced diet should furnish sufficient iodine for normal thyroid function.

Primary hyperthyroidism or exophthalmic goiter is not uncommon in children. Previous to 1932 forty five children fifteen years old or younger were treated for this disease at the Lahey Clinic. In children the basal metabolism is not always reliable for diagnosis but all of the primary and most of the secondary clinical signs and symptoms may be present. It is rather generally believed that children with primary hyperthyroidism should not be operated upon because they might be carried along with medical treatment. However if they are treated only medically by complete rest and the administration of small amount of iodine and sedatives the condition will not be cured. The results of operation at the Lahey Clinic are very satisfactory.

Thyroid adenoma is a rare finding in children. The author has seen it only three times. The findings are identical with those in adults. The treatment is identical in age surgical removal.

The cases of carcinoma of thyroid or gung in children have been discussed at the Lahey Clinic.

ELLA M. S. LUNDEN

Dodds E. C. and Robertson J. D. The Clinical Applications of Dinitro O Cresol. *La et* 1933 ccxv 1197

The authors previously reported the occurrence of an increase in the basal metabolic rate in both man and animals following the administration of dinitro-o cresol. They have since found it possible to maintain the metabolic rate at from 30 to 50 per cent above normal by this means without untoward symptoms. In a case of untreated myxedema the administration of dinitro o cresol raised the metabolic rate as high as +74 but did not affect the edema whereas the administration of thyroid extract resulted in complete relief of the symptoms. These facts indicate that metabolic stimulants such as dinitro o cresol are of no value in the treatment of myxedema and that the relief of myxedema and the power of raising the metabolic rate are two separate functions. Both of these functions are possessed by thyrovin.

M. HERBERT BARKER M.D.

Bea ce D. C. and Pemberton J. DeJ. The Pathological Anatomy of the Liver in Exophthalmic Goiter. *Am J Med* 1933 11 687

This article is a statistical analysis of the pathological anatomy of the liver in 107 cases of exophthalmic goiter. The clinical condition leading to fatal termination of the disease is not stated. The presence of acute changes in the liver was found in 5 or 5 per cent of the cases. This is interpreted as without definite relationship to the thyrotoxic process. The livers were somewhat smaller than normal. About 60 per cent showed chronic changes. In about 15 per cent of these the chronic changes were mild. Jaundice was present in 21 per cent of the cases. The authors think that the hepatic changes are related not only to the hyperthyroid state but also to the toxic factor in exophthalmic goiter postulated by Plummer.

PAUL STARR M.D.

Stevenson R. S. The Treatment of Tuberculosis of the Larynx. *B J M J* 1933 11 960

Tuberculosis is the most common of all specific infections of the larynx. Sir St. Clair Thomson states that 1 out of every 3 patients with active phthisis has a laryngeal lesion. Since tuberculosis of the larynx is never primary in the larynx but always secondary to tuberculosis of the lungs its treatment must be based on the theory that improvement of the pulmonary lesion will usually be associated with improvement of the lesion in the larynx. The treatment of the pulmonary lesion is therefore of prime importance.

During 1932 the author had under observation 320 patients with laryngeal tuberculosis. Thirty eight were clinically cured 101 showed improvement 87 showed no change the condition of 59 became worse and 41 died. The chief factors in the treatment were a general sanatorium regime and vocal rest. These were supplemented in some cases by artificial pneumothorax and when necessary by local treatment. Stevenson discusses in detail the

value of various direct and indirect therapeutic measures. On the basis of 40 cases he concludes that artificial pneumothorax is usually of great benefit. Of the 40 patients treated by this procedure 26 showed improvement or were cured, 8 showed no change, the condition of 5 became worse, and 1 died. The author reviews also 9 cases treated by phrenic nerve avulsion and cases treated by thoracoplasty with resulting improvement.

The chief factor in local treatment is vocal rest. In all of the author's cases of early laryngeal involvement silence is prescribed at once. In chronic cases and when a painless tuberculoma is present silence is of less benefit. If there is no improvement in six months other methods of treatment must be considered. The great majority of the author's sanatorium cases are treated only by vocal rest in addition to the sanatorium regime. Stevenson tends to use the galvanocautery less and less. He employs it chiefly for dysphagia caused by a small ulcer. Under indirect laryngoscopy the sharp pointed cautery is driven through the margin of the ulcer at 2 or 3 points. The pain is relieved almost immediately by this procedure.

General exposure to carbon arc light is beneficial only in cases of early laryngeal tuberculosis in patients with a good physique and with only a slight pulmonary lesion. In advanced cases it is of no value and may even be harmful. Of the author's 6 patients who were treated by artificial sunlight applied into the larynx perorally 5 showed marked improvement. The weekly application of chaulmoogra oil was found to be soothing but without curative effect. Lactic acid (50 and 100 per cent) was of considerable benefit in ulcerated lesions, especially when the epiglottis was involved. Tracheotomy is indicated only for the relief of stridor. The author has observed only 1 case in which it was necessary. The simplest method of controlling pain is the intralaryngeal insufflation of equal parts of orthoform and anæsthesin. Pain caused by a small localized ulcer may be relieved by cauterization. In advanced cases the superior laryngeal nerve may be blocked with a solution of 2 gr. of eucaine hydrochloride in 1 oz. of 80 per cent alcohol or may be resected.

The article has an extensive bibliography.  
ARTHUR S. W. TORREY, M.D.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

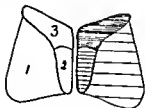
Torkildsen A and Penfield W. Ventriculographic Interpretation. Arch A & P & Psychiat 1933 XXX 1:1

The authors constructed a model of the human cerebral ventricles after a study of over 400 selected cases of ventriculography or encephalography and careful dissections of the brain. They believe that the terms anterior horn, body, and posterior horn are vague and not sufficiently descriptive to make ventriculographic interpretation a relatively simple procedure. They divide the lateral ventricle as seen from the side into 6 portions and show how each portion can be readily recognized as a separate unit in anteroposterior views (Fig 1).

Shadow 1 (Fig 2) is thrown by the anterior horn as it passes forward and downward. Many observers have been misled believing that the darker shadows Nos. 2 and 3 represent the anterior horn. This may have been due to an attempt in the development of the roentgenograms to intensify the darker shadows



Fig 1 The lateral ventricle divided into 6 portions which represent as units in anteroposterior view. The divided horns of the lateral ventricle project Portions 1, 2, and 3 in an anteroposterior plate. These lines would be approximately parallel with the base of the skull.



Fig

Fig 2 Outlines of Portion 1 and Portion 2 in an anteroposterior view.

Fig 3 Superposition of ventricular shadows in an anteroposterior plate.

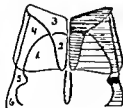


Fig 3



Fig 4 Ventricular model in an anteroposterior plate.

obliterating Shadow 1 entirely. Shadow 2 represents the portion of the lateral ventricle situated in front of the thalamus and posterior to Portion 1. It is bounded laterally by the inner surface of the caudate nucleus and medially by the septum pellucidum. Shadow 3 is due to the total length of the upper portion of the body of the ventricle. It always appears darker than the other shadows because of the long air space combined with partial overlapping of Portions 2 and 4. Shadow 3 is bounded laterally by the body of the caudate and above by the corpus callosum. Shadow 4 is produced by the posterior portion of the ventricle which curves backward, downward, and laterally. Shadow 5 is produced by the posterior horn and is not found consistently because the posterior horn may be lacking even when the ventricles are normal. It usually appears as a dark, circumscribed shadow which is superimposed on and lies between Shadows 4 and 6 projecting somewhat medially. Shadow 6 represents the inferior horn. When the occiput is up it may be invisible because of the pooling of fluid within it.

As the general side outline of the lateral ventricle follows that of the skull, a ventricle of a brachycephalic skull is shorter and more sharply curved than a ventricle of a dolichocephalic skull. In gen-

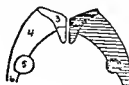


Fig 5 Superposition of ventricular shadows in an anteroposterior plate.



Fig 6 Ventricular model in a postero-anterior view

eral the lateral ventricle outlines the thalamus between its body and the inferior horn. The variable notch seen between the body and posterior horn is due to the splenium of the corpus callosum. Narrowing or absence of the posterior horn is not to be considered an abnormality. The outline of the foramen of Monro is usually seen at the postero-inferior angle of Portion 2 of the lateral ventricle. The third and fourth ventricles with the aqueduct of Sylvius are usually seen easily.

The authors conclude that such an analysis makes the detection and description of ventricular changes a relatively simple procedure.

ROBERT ZOLLINGER M.D.

Foster J M Jr and Frey D Craniocerebral Injury. *Am J Surg* 933 114

The results of treatment in two series of cases of craniocerebral injury are compared. One series was treated by supportive expectant treatment in 1927 and the other by the modern dehydration treatment in 1932. The only difference of importance between the two groups of cases was the fact that in the second group 8 per cent more of the patients were unconscious on admission to the hospital and on the average remained unconscious three times as long as the patients in the first group. The cases reported were those showing X-ray evidence of skull fracture or blood in the spinal fluid or both. Cases in which death occurred before these diagnostic procedures were carried out were proved at autopsy. Those in which death occurred in the receiving room were not included in the study. In 1927 the total mortality was 31.5 per cent and in 1932 28.3 per cent. The survival period of patients who eventually died was nearly twice as long in the 1932 series as in the 1927 series. If a correction is made for three cases in the latter series in which death would probably have occurred from concomitant injuries the mortality is reduced to 24.6 per cent.

First to be considered in the treatment of these cases were supportive measures with intensive use

of intravenous therapy. Roentgenograms were not taken until all evidence of shock had disappeared. In the later series of cases efforts were directed toward combating cerebral edema and increased intracranial pressure after the initial period of shock. This was done by (1) repeated spinal puncture (2) the intravenous administration of glucose solution (3) the limitation of fluids and (4) the administration of magnesium sulphate by mouth or rectum. In the presence of increased pressure at the initial spinal puncture an amount of fluid was removed sufficient to reduce the pressure by more than 50 per cent and subsequent spinal punctures were repeated at intervals of from eight to twelve hours according to the blood pressure findings, the pulse rate and the spinal pressure readings. Thereafter in cases with gross blood drainage was continued until the fluid became grossly clear. Hypertonic glucose was used to reduce shock and combat increased intracranial pressure. From two to four doses of 50 c.c. of a 50 per cent solution of glucose for from two to four days were usually sufficient. The fluid intake ranged from 300 to 1000 c.c. per day and averaged 800 c.c. It is important to guard against too great dehydration as this may do more harm than good. When the pulse rose to over 120 fluids were given freely. In order to obtain the maximum effect magnesium sulphate was administered orally or by rectum an hour or so after the intravenous injection of the glucose.

Operative procedures were carried out infrequently. The authors believe they are indicated primarily in compound fractures and cases of extradural hemorrhage.

JERRY H. ERRO M.D.

Jefferson G The Treatment of Acute Head Injuries. *Brit Med J* 933 1107

The author analyzed the cases of 1004 consecutive patients with head injury who were treated at the Manchester Royal Infirmary and Salford Royal Hospital. Two hundred and thirty (23 per cent) died. Of the 132 fatal cases in which the time of death was recorded exactly, the death occurred within twenty-four hours in 60 per cent and before the end of forty-eight hours in the next largest number indicating extensive damage in a high proportion of the cases. Jefferson believes that a certain primary mortality is unavoidable but that many of the late deaths may be prevented.

He classifies cases of head injury into 3 groups on the basis of stupor rather than according to the evidences of fracture. Group A includes those of patients who are deeply unconscious or comatose with widely dilated pupils and sluggish corneal reflexes, cyanosis, stertorous respiration and flaccid limbs. These are the cases with the primary or less fixed unavoidable mortality.

Group B includes the cases of patients already recovering consciousness upon the arrival at the hospital. These patients have no recollection of the accident but can be induced to answer questions. Often they are in shock and are vomiting and rest

less. Some of them may relapse into unconsciousness with or without localizing signs of hemorrhage. The extradural and subdural hematomata are commonly found in this group. If there is any doubt with regard to the presence of intracranial bleeding an exploration should be done.

Group C presents the greatest difficulty in diagnosis and treatment as the patients belonging to it are admitted to the hospital in a state of stupor or emiplegia and remain uncooperative and unresponsive for many hours or days. They may move about in bed and examination of the pupils and reflexes is negative. However these patients should be examined often and constantly observed for localizing signs of hemorrhage or damage to cerebral centers. The author emphasizes that patients in this group are often classed as unconscious but progressing satisfactorily and examinations are not done to determine their condition accurately.

The cause of transient traumatic stupor may often be a temporary vascular arrest but contusion and laceration of the brain may be present. Jefferson believes that the symptoms depend more upon the part of the brain injured or the site of the clot than upon increased intracranial pressure. A small clot may produce stupor by causing a local reaction since the spinal fluid pressure is often not elevated. The author believes that irritability, restlessness, incontinence and other similar reactions may often indicate injury to the frontal and temporal lobes. He cites similar reactions produced in animals by lesions of the under surface of the frontal lobes. Following contusion to the speech area producing aphasia many patients are mistakenly considered to be in stupor because they are unable to speak or fail to understand.

The author does not advocate spinal puncture or the intravenous administration of hypertonic solutions unless secondary edema occurs on or after the second or third day. The patients are unconscious because the brain has been damaged generally and not because of edema. Edema may be benefited by the intravenous administration of a hypertonic solution. Intravenously administered hypertonic saline solutions may promote intracranial bleeding by raising the blood pressure and at the same time by shrinking the brain, increase the space into which hemorrhage may occur.

The syndrome from middle meningeal bleeding is well known and recognized but subdural hematomata are frequently overlooked. The author always considers the possibility of hemorrhage in direct temporal contusion if there is the least sign of contralateral weakness of the extremities, especially in the presence of a Hutchinsonian pupil. He believes that subdural hematomata arise from injury to the lower portion of the frontal or temporal lobes. A small hemorrhage may be made below the temporal crest in any case in which hemorrhage is suspected.

The pulse rate varies greatly. A secondary slow pulse may develop toward the end of the first week. Later a third patient gradually recovers. However

on the whole slow pulse rates are found during the first few hours more commonly in fatal cases than in others.

ROBERT ZOLLINGER, M.D.

Dott N. M. Intracranial Aneurisms. Cerebral Arteriography. Surgical Treatment. Ed. by G. H. J. 1933. 21. 219.

Three clinical types of intracranial aneurism are recognized: the ocular parietic type, the apoplectic type, and the tumor like type.

The ocular parietic type is characterized by an incomplete oculomotor paresis accompanied by homolateral frontal headache and is due to small effusions of blood from an aneurism near the circle of Willis.

The apoplectic type is characterized by a sudden stroke with partial or complete loss of consciousness for a period of time, subsequent signs of cerebral compression and meningeal irritation with or without cranial nerve paralysis and focal cerebral signs and the presence of blood in the cerebrospinal fluid removed by lumbar puncture.

The tumor like type is characterized by signs of compression of adjacent structures, particularly the optic nerves and chiasm, the clinoid processes and the adjacent bone.

In the ocular parietic type, carcinomatous invasions of the base of the skull from the nasopharynx involve the abducent before the oculomotor nerve. In the apoplectic cases the fact that the patient is usually young and healthy serves to differentiate the condition from cerebral thrombosis, intracranial hemorrhage and meningitis. In both of these types an accurate localizing diagnosis can be made by arteriorenography. In cases of tumor like aneurism the clinical diagnosis allows only the inference of a progressive swelling in a certain situation and the differential diagnosis can be made only by operation or arteriorenography. In addition to disclosing aneurisms, arteriorenography gives information concerning other tumors by the distortion of the cerebral vessels.

Aneurisms of the basal cerebral arteries are found in about 1 of 700 consecutive postmortem examinations. In many cases they are symptomless and not the cause of death. They are more frequent in the absence than in the presence of arteriosclerosis and syphilis. The average age of rupture of the aneurism is thirty-two years, but instances of rupture at the ages of six and nine years are on record. It is therefore evident that the primary factors in the formation and rupture of an aneurism are the pressure of the blood and a local weakness of the vessel wall.

An adequate explanation of the local defect in the vessel wall has been supplied by recent researches, especially those of Forbush. In the development of arteries the larger trunks acquire a muscular coat first. Later the branches acquire muscular coats as independent developments. At the junction of the branch and the arterial trunk the muscle coats meet and fuse but the fusion may be imperfect. In apparently normal arteries small developments of gaps constituting definitely weak points in the vessel



walls are demonstrable. It is significant that all of the saccular aneurisms under discussion were found to arise along the line of junction of the arteries with their branches. The cerebral arteries are peculiarly thin walled but are especially protected from the force of the pulse by flexures of the main vertebral and carotid trunks just as they enter the skull.

The formation of a saccular aneurism through a defective spot in the arterial wall depends upon the blood pressure. In the presence of severe defects in the wall even a normal blood pressure may cause an aneurism. That high blood pressure may cause an aneurism in an arterial junction which would otherwise have remained intact is shown by the definite association of basal cerebral aneurism with stenoses of the isthmus of the aortic arch. In a case of this type the blood pressure in the right arm was 190 while that in the left arm and leg distal to the stenosis was 120. The patient had had several attacks with signs indicating an aneurism of the intracranial portion of the left internal carotid artery. Other cases are cited to show the effect of increased intracranial pressure causing the rupture of an aneurism. The age at which rupture occurs depends upon the degree of the defect and on the blood pressure. The site of the aneurism is usually in relation to the termination of the internal carotid artery and more frequently, on the left side than the right side. Common sites are the junctions at the posterior communicating branch, the bifurcation into the middle and anterior cerebral arteries and the origin of the first large branch from the middle branch cerebral artery in the base of the sylvian fissure. Aneurism occurring here are more likely to cause minor or major hemorrhages than symptoms and signs of tumefaction and are associated with recurrent ophthalmoplegia and spontaneous subarachnoid hemorrhage. Aneurisms at the origin of the ophthalmic branch from the internal carotid and at the junction of the anterior cerebral and anterior communicating arteries are less frequent and produce signs of tumefaction more often than they cause hemorrhage.

In the treatment of intracranial aneurism there are 3 possibilities: (1) conservative treatment, (2) proximal ligation of a carotid artery and (3) the application of muscle fragments directly to the aneurism. In cases of minor hemorrhage associated with ophthalmoplegia and headache and cases of major subarachnoid hemorrhage arteriovenous angiography identifies and shows the location of the lesion. If the lesion is proximal to the circle of Willis ligation of the carotid artery is indicated. Also in cases exhibiting a basal tumor syndrome proximal ligation should be done. If an aneurism is shown by clinical findings or arteriovenous angiography to be distal to or on the circle of Willis conservative treatment is advisable. In cases with repeated hemorrhages especially at intervals of a few days or weeks the prognosis is grave, the probability of spontaneous healing is slight and direct operation is justified. At operation ligation of a main arterial trunk distal to the circle of Willis is impossible as the

resulting functional loss would be too severe. The aim should be to form a secure scaffolding for clot and fibrosis around the aneurism by the application of fragments of muscle, the artery being left patent and intact. In the case of an aneurism producing a tumor syndrome and situated distal to the circle of Willis conservative treatment is indicated unless repeated hemorrhages occur.

Conservative treatment by rest and the administration of morphin in the early days following a single subarachnoid hemorrhage may be supplemented by lumbar puncture. Slow removal of the fluid without reduction of the pressure below normal allows the removal of considerable quantities of irritating blood. The symptoms of cerebral compression and meningeal irritation may be relieved and convalescence shortened.

Spontaneous and permanent cure may follow conservative treatment. When the patient has survived for several months without further evidence of hemorrhage it is unlikely that the thrombosed aneurism will cause further bleeding.

After recovery the patient should be warned against activities likely to raise the blood pressure considerably but otherwise he should be encouraged to live a normal and active life. E. S. PLATT, M.D.

Lucertini, T. The Value of Encephalography in the Diagnosis of Brain Tumors. (In *Atti della Società Italiana di Neurologia e Psichiatria*, Roma 1933 XI, sez. med. 596).

This is a detailed clinical encephalographic and pathological study of an endotheloma of the right parietal lobe and a neurofibroma of the cerebello-pontine angle which demonstrates the value of encephalography in the diagnosis of brain tumors.

The first case is reported also as a contribution on the symptomatology of parietal lesions as the growth in the right parietal lobe was associated with astereognosis of the left hand of the right handed patient. All who have localized the stereognostic sense in the second parietal convolution have noted that this localization is almost always in the left hemisphere. In the recent literature accessible to him, Lucertini has been able to find only one case similar to his, a case reported by Wendt.

In the second case Lucertini practiced arteriography successfully without causing untoward symptoms but also without contributing to the diagnosis. The method and the interpretation of the results are difficult. Arteriography offers no advantages over encephalography.

With regard to the comparative merits of encephalography and pneumoventriculography the author states that the question is still open. He reviews the controversy between the American school represented by Dandy and the German school represented by Bingel. He states that the extremely easy and simple technique of Bingel which does not expose the patient to dangerous interference is certainly not comparable with pneumoventriculography which although not difficult is a surgical opera-

tion with grave potential dangers. In cases of tumor of the posterior fossa already diagnosed ventriculography may be preferred as a measure of prudence although if a careful technique is employed the danger in the use of the lumbar route is slight. According to the author's experience air introduced by the lumbar route rarely fails to reach the lateral ventricles and its failure to do so is in itself a valuable index of abnormality of the arachnoid. However ventriculography is a more refined and complete method than encephalography and is of value to supplement the latter. The amount of air introduced by the lumbar route should not be less than 50 c.c. but amounts over 100 c.c. are dangerous.

Encephalography is of great value. Fatalities associated with it are exceedingly rare considering its extensive use. Nevertheless it should be employed with discretion and in the author's opinion should be reserved exclusively for the study of tumors. Its use in conditions in which a clinical diagnosis is easy is unjustifiable.

The article is illustrated and has a bibliography.  
M. E. MORSE, M.D.

Garland H. G. and Armitage G. Intracranial Tuberculoma. *J. Path. & Bact.* 1933 xxx u 46

Of 1300 consecutive autopsies performed at the Leeds General Infirmary in the period from 1910 to 1931 an intracranial tumor was found in 264. Eighty-nine (33.8 per cent) of the tumors were tuberculous. The incidence of intracranial tumor based on the number of autopsies was 2.02 per cent and the incidence based on the number of brains examined 7.45 per cent. In addition to the 89 cases of tuberculoma there were 356 cases of tuberculous meningitis without tuberculoma. The incidence of neurotubercle in all autopsies was 3.42 per cent and in all brains examined 12.6 per cent. Tuberculomata constituted 34 per cent of all intracranial masses, 63 per cent of all masses in patients under twenty years of age and 66 per cent of all masses in children. Above the age of twenty years their incidence was 17 per cent.

In Leeds tuberculomata are as common as gliomata and these 2 tumors constitute 70 per cent of all intracranial tumors. The ratio of tuberculomata in females and in males is 4:3. The triennial incidence of tuberculoma during the period reviewed although variable did not show any appreciable decrease. There were 41 cases of solitary tuberculoma and 48 cases of multiple tuberculoma. The cerebellum was involved in 67 per cent of the cases and the cerebrum in 47 per cent. The most common type of lesion was the solitary cerebellar mass.

Tuberculous meningitis was the cause of death in about 75 per cent of the cases. Other tuberculous lesions caused death in about 20 per cent. In only 2 cases was death due to increased intracranial pressure and in both of these there was active pulmonary tuberculosis.

The fact that there were only 2 cases of calcified tuberculoma supported Stewart's statement that authentic cases of spontaneous cure of intracranial tuberculoma are rare. In both of the cases cited the mass was calcified throughout but in a case recorded by Smith in 1927 the calcification was peripheral. Occasionally a calcified mass in the brain is discovered on X-ray examination. Under such circumstances the calcification is usually in the form of a shell. It is therefore impossible in the present state of our knowledge to assert positively that such a mass is a tuberculoma or a neoplasm.

Dural tuberculoma is uncommon and quite distinct from tuberculoma within the substance of the brain. Intracranial masses are rarely adherent to the dura mater whereas intracranial gumma is probably always attached to the dura mater. In 1 case cited there was widespread irregular thickening of the entire dura of the posterior fossa including the undersurface of the tentorium. The degree of thickening varied up to .4 in and the plaque had a yellowish nodular appearance. This is an example of the rare condition known as meningitis en plaque tuberculosa reported by Pardee and Knox in 1927. It is seen only in adults and is usually associated with besedache fever vomiting and jacksonian attacks.

The chief clinical manifestations may be divided into 2 main groups: those due to increased intracranial pressure and those due to the presence of active tuberculosis. Tuberculomata rarely cause symptoms prior to the onset of tuberculous meningitis. There are no characteristic clinical manifestations of intracranial tuberculoma but in 90 per cent of the cases pyrexia occurs at some stage. A family history of tuberculosis was given in 10 per cent of the cases reviewed. In occasional cases dilatation of the pupils, vertigo, cough, choroidal tubercles and optic atrophy were found. The pulse rate was practically always increased and its rapidity was usually out of proportion to the degree of the pyrexia.

The data regarding cerebrospinal fluid changes in cases without meningitis are insufficient for conclusions. As a cerebral neoplasm may occur in a patient who is suffering from active tuberculosis an accurate clinical diagnosis of intracranial tuberculoma is impossible. The discrepancy between the pathological and surgical incidence of tuberculoma can be explained only by the absence of clinical manifestations prior to the onset of tuberculous meningitis.

E. S. PLATT, M.D.

## SPINAL CORD AND ITS COVERINGS

Tamaki K. Thirty Nine Extramedullary Tumors of the Spinal Cord. *Am. J. Surg.* 1933 xxx 397

Of thirty nine extramedullary tumors thirty four were fibroblastomata, four were fibromata and one was a neuroma. The tumors are always lateral at the outset but may come to occupy nearly any position in relation to the spinal cord growing as

they do in the lines of least resistance. Most of them are intradural but some are extradural and some are dumb bell shaped. The vast majority occupy the level between the fourth cervical and sixth thoracic segments. They show a striking similarity in shape and configuration: most of them being elongated and sausage shaped.

Pain is a conspicuous symptom and the first one in 82 per cent of the cases. It is usually first noted as a more or less definitely localized point corresponding to the root segment involved. It may be cramp-like burning or drawing, a dull ache, neuralgic knife-like boring, rheumatic or of a girdle character. The next most frequent complaint is paresthesia. Motor weakness is not a common initial symptom but may come on early. It is generally first noted in the leg of the affected side but may eventually involve the contralateral side. As a rule the paralysis is of the spastic type but it may be flaccid. About 60 per cent of the cases show sphincteric disturbances.

In the cases studied pain of some sort was present for twenty-seven and seven-tenths months; paresthesia for seventeen months and motor weakness for sixteen and five-tenths months before operation. Thus the common history is that of early localized pain followed by paresthesias, anesthesias and motor weakness.

The segmental diagnosis is based on (1) sensory phenomena (2) vasomotor disturbances (3) sympathetic phenomena (4) motor symptoms such as atrophies and twitchings (5) loss of an individual reflex (6) the findings following the injection of iodized oil and (7) the findings of dual lumbar punctures (xanthochromia and increased globulin content with spinal block). Spinal cord tumors may be confused with transverse myelitis, syringomyelia and multiple sclerosis. JOHN W. EMMETT, M.D.

### MISCELLANEOUS

Harris W. The Traumatic Factor in Organic Nervous Disease. *Brit. Med. J.* 1933 49 5

The question as to the causal relationship between injuries to the head, back, trunk or limbs and the subsequent development or aggravation of a pre-existing organic nervous disease has been much debated and entirely contrary opinions have been expressed by various authorities. Grave injustice is often done by referring in certain cases to admit the possibility of cause and effect in progressive nervous disease following trauma. We know for example that injury to the peripheral neurons produces chromatolysis in the nerve cell in the spinal cord or posterior root ganglion connected with the peripheral nerve fiber that is injured. This metabolic change called by Marinesco the reaction a distance can be recognized on microscopic examination. It is conceivable that under certain circumstances further changes of a progressive nature may result. Since at the present time we know nothing of the pathology of progressive muscular

atrophy it is impossible to state that there is conceivable pathological process by which an injury unaccompanied by an infective process can bring about a general or rapidly fatal dissolution of the nervous system.

The author first cites the case of a flying officer with neurosyphilis who developed symptoms shortly after a blow on the head received while he was making a parachute landing. He next cites the case of a porter who developed amyotrophic lateral sclerosis following a severe bruise of the right foot. The symptoms began immediately after the injury and were first noted in the region involved by the trauma. A third case cited was that of a patient who developed the typical syndrome of pituitary tumor following a blow on the head. At operation an adenoma of the pituitary was demonstrated. In the first case the trauma apparently so affected the tissues as to hasten the onset of symptoms due to latent disease while in the second and third cases either the same thing had occurred or the disease had been actually initiated by the trauma.

The author reviews 16 cases of chronic sclerosis of the spinal cord, most of them cases of typical disseminated sclerosis developing soon after severe injuries to the back or head. These 16 cases constituted 7 per cent of 234 cases of spinal sclerosis observed by Harris. Some of the patients were entirely well before the injury while others had suggestive symptoms of disease which became markedly increased after the trauma. The brain being more liable to suffer contusion than the spinal cord, cerebrospinal sclerosis appears to be a far more common sequel of injury than degenerative processes practically limited to the spinal cord such as progressive muscular atrophy and tabes.

As nerve cells are damaged and then undergo atrophy as the result of punctiform hemorrhages and oedema the author concludes that in our present state of pathological ignorance it is impossible to assert confidently that such a process once started will not progress in some instances even to a fatal termination. ARTHUR S. W. TOWNSEND, M.D.

Davis L. The Surgical Treatment of Intractable Pain. *J. Am. Med. Ass.* 1933 99 9

Satisfactory results from the surgical treatment of intractable pain require a knowledge of the mechanism involved in the physiology of somatic and visceral pain. Davis reviews the outstanding contributions on this subject.

Section of the lateral d. is on of the posterior spinal root or the lateral columns of the white matter of the cord will abolish such somatic reflexes to pain as a rise in the blood pressure and rapid respiration. The experimental study of visceral pain has shown that painful visceral manifestations can be abolished by (1) section of the splanchnic nerve on that side (2) complete transverse section of the cord (3) lateral section into the gray matter and (4) bilateral section of the proper number of posterior spinal roots. Davis states that the en-

satisfactory results of chordotomy for the relief of visceral pain are due to failure to extend the section into the gray matter. Section involving only the lateral white column (spinothalamic tract) relieves only somatic pain.

The theories explaining the sensation of pain caused by visceral disease are discussed. Three of these are mentioned here. Visceral afferent impulses are brought up through the splanchnics and white rami to the cord whence they are radiated by way of the sensory tracts to the periphery. Head believes that there is some form of spinal cord irritation which renders painful all sensory impulses going through this region. Davis and Follock assume that visceral painful impulses produce efferent cutaneous reflex effects liberating a metabolite in the skin which is painful. These somatic painful impulses are then carried to the cord and to consciousness over the well known somatic afferent pathways. This

theory agrees well with the recent reports of relief from the subcutaneous injection of novocain in a peripheral area such as the relief of anginal pain by the subcutaneous injection of novocain in the left arm.

There is no doubt that the sympathetic system has an important role in the mechanism of pain production. From an experimental study of the cervical sympathetics the author comes to the conclusion that the stimuli go by way of the sympathetic ganglia to the post ganglionic fibers to their terminals (blood vessels etc) from whence is liberated the metabolite which is returned centrally by way of the sensory roots with the production of conscious pain.

In conclusion Davis cites a case showing total loss of sensation after section of all of the posterior roots to the upper extremity.

BENJAMIN G. P. SHAFIROFF M.D.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Moschcowitz A V Vestigial Mastitis 4 S 6  
1933 xc iii 8 5

Moschcowitz describes vestigial mastitis as a painful cord like structures extending in a line from the axilla by way of the nipple to the symphysis. He believes that these cords are inflamed parts of an abnormally persistent milk ridge of the embryo. He reports six cases in one of which biopsy sections were made.

SAMUEL PERLOW M D

Eberts E M Paget's Disease of the Nipple  
I te at Cl et 933 1 192

The author attempts to show that Paget's disease of the nipple is not primarily epidermal but begins as a cancerous perversion of the columnar epithelium of the ducts and that in all cases the only treatment which is justifiable is radical amputation of the breast.

Clinically Paget's disease is a chronic unilateral affection of the nipple and areola resembling in some respects eczematous dermatitis but resistant to all local treatment. Periodic bleeding from the nipple may occur. With the appearance of the epidermal erosion there can be detected on careful palpation a cordlike strand extending from it in to the breast. In clinical sequence the third stage is that of lymph gland involvement.

The conspicuous and characteristic macroscopic feature of the Paget's lesion is the presence in the malpighian zone and especially in the basilar layer of the epidermis of large pale cells occurring singly or in clusters which with Masson's triple stain and under low magnification give to the field a lace like appearance. Beginning with the penetration of the basilar layer of the epidermis the Paget cells continue to drift toward the surface where ultimately they appear as rounded bodies even between the cells of the cornified stratum with which they are shed.

The most common affections of the nipple from which Paget's disease must be differentiated are (1) simple eczema occurring at all ages and involving usually not only the nipple but also the whole of areola as well and sometimes the greater part of the skin of the breast (2) a fissure of the nipple occurring during lactation and (3) warts or verrucae single or multiple. The papillomatous growths rise above the surrounding epidermis of the nipple. They are painless and do not tend to ulcerate.

The treatment of all cases of Paget's disease is radical amputation of the breast with removal of the pectoral muscles and the fat lymphatics and lymph glands of the axilla.

J THORNWELL WITHERSPOON M D

## TRACHEA, LUNGS AND PLEURA

Rubin E H and Newman H S Upper Lobe  
Bronchiectasis Am J M Sc 933 clxxx 65

This article consists chiefly of a résumé of eight cases of non tuberculous upper lobe bronchiectasis which the authors collected from their service and sixteen cases collected from the literature. In addition there is a brief discussion of the diagnosis of upper lobe bronchiectasis.

One of the striking clinical features of the collected cases was the high average age of the patients—sixty years. In each instance repeated search for tubercle bacilli was unsuccessful. The detailed macroscopic and microscopic reports are based on autopsy findings.

Although in by far the majority of cases of upper lobe bronchiectasis the condition is secondary to a tuberculous infection the authors believe that in a few cases the bronchiectasis is non tuberculous. The chief basis for this assumption is the absence of tubercle bacilli in the sputum.

The most constant physical finding and the most helpful diagnostic feature in non tuberculous cases is the presence of resonance above the clavicle a finding emphasized previously by Fishberg. Other findings are absence of apical shrinkage and adherence between the visceral and parietal pleura at this point.

Although lipiodol injection followed by X-ray examination is mentioned in connection with the case no particular emphasis is placed on this extremely important diagnostic procedure.

The authors report also three cases in which upper lobe bronchiectasis developed on the basis of an active tuberculous lesion of the lung.

FRANKLIN E. WALTON M D

Pardal R Ferrari R C and Itolz A Cancer  
the Apex of the Lung With Associated Tuberculous Lesions the Dejerine Klumpke Syndrome and Vertebral Metastasis (Cancer et éric pulmo co les ones oest ntes d tuberculous syndrome de Déjérine Klumpke y n tistas rt bras) S ma a Méd 1933 xl, 409

The case reported in this article is the fifth case of cancer of the lung with involvement of the spine and coexisting tuberculosis to be recorded. There was a fibrous tuberculosis of the right lung as well as of the left in which the cancer was situated. A tuberculosis and cancer were present to either the same spot both of these lesions could be diagnosed on the same microscopic slide.

In certain cases of cancer of the lung metastases spread to the supraclavicular fossa and the costo-vertebral angle thus becoming a tertorized 1

the case reported compression of the nerve roots and spinal cord produced an inferior radicular pressure syndrome of the brachial plexus (Bernard Horner syndrome). There was intense pain in the region of the ulnar nerve with atrophy of the thenar and hypothermic eminences and paralysis of the interossei and lumbrical muscles.

A cancer mass was found excavating the pulmonary apex and a secondary mass in the supraclavicular fossa and costovertebral angle. The arm on that side showed marked oedema. Secondary growths had invaded the spine completely destroying the first dorsal vertebra and compressing the cord at that level.

From the standpoint of the clinical and anatomical picture of cancer alone only thirteen similar cases have been recorded. Of these eleven were observed in the Argentine. Tobias calls this condition the painful apicocostovertebral syndrome.

WILLIAM R. MEERER, M.D.

**Coquelet The Economic Treatment of Purulent Pleurisy** (*L'traitement économique des pleurésies purulentes*). *Arch. méd.-ch. de l'App. resp.* 1933 viii 239.

The prognosis of purulent pleurisy depends to a considerable degree upon factors not related to the mode of treatment. Among them are:

1. The condition of the underlying lung. An autonomous or metapneumonic pleurisy becomes cured more easily than a putrid pleural suppuration developing in contact with a focus of pulmonary gangrene.

2. The nature of the causal organism. It has long been known that the pneumococcus is less deadly than the streptococcus and that the streptococcus is less deadly than the anaerobes.

3. The general condition of the patient. A person with diabetes, alcoholism, or a cardiac condition is less likely to recover from purulent pleurisy than an otherwise healthy person. Age is also a factor. The mortality of purulent pleurisy is high in infancy and advanced age.

In a comparison of the results of different methods of treatment a bacteriological classification of the cases is of secondary rather than primary importance. Of most importance is a classification based on the associated lesions of the underlying lung and the patients' general condition and age.

The author gives a brief review of the history and a description of the various modes of treatment.

In his opinion, the factor primarily responsible for the high mortality and the persistence of chronic suppurating cavities is the occurrence of a permanent drainage throughout the period of drainage of an open pneumothorax. Various methods to prevent this pneumothorax have been suggested and have been used from time to time but have not received general favor.

In 1918, after the influenza epidemic, Netter reported that in purulent influenzal pleurisy early pleuotomy had a mortality of 83 per cent. During

the war the mortality was shown by some statistics to range from 40 to 50 per cent and by others to range from 84 to 92 per cent.

Coquelet concludes that open pneumothorax causes asphyxia by the following two mechanisms:

1. Hindering the entrance of air by way of the larynx.

2. Causing anaemia by favoring the mixture of venous and arterial blood (the phenomenon of Spohl and Dautrebande).

As long as the mediastinum is not stabilized by adhesions the normal lung suffers from an open pneumothorax almost as much as the collapsed lung. A patient can tolerate thoracic section in direct proportion to his vital capacity. As long as the musculature is strong and resistant there is a possibility of compensation.

Of the various procedures the author prefers closed drainage. By some lavage is believed to be associated with the danger of dissemination of the infection. However, this danger is avoided if the lavage is carefully done regularly and with complete evacuation of the irrigating fluid and the use of a non-irritating solution such as dilute Dakin's solution. It has been stated also that lavage may give rise to undesirable reflexes: attacks of epilepsy, hemiplegia and cerebral apoplexy and that it may even cause death. These accidents occurred chiefly before the era of strict antisepsis and more refined technique. Today they are rare and need not be feared if non-irritating fluids at body temperature are used and if the amount does not exceed 500 gm. at the most and is reduced as the suppurating cavity retreats.

To prevent chronic purulent pleurisy Coquelet recommends an operation which permits re-expansion of the lung as soon as possible. This may be achieved best by the early use of closed drainage followed immediately by exercise and respiratory gymnastics.

In the presence of tuberculosis or a superimposed infection it is imperative to operate without open pneumothorax.

Another factor leading to chronicity is the presence of a bronchopleural fistula. Bronchopleural fistulae are more common than is suspected. They close quickly (in one or two months) after closed drainage provided they are not filled with fluid and are not dilated by too energetic respiratory exercises. In the presence of a bronchopleural fistula respiratory exercises should not be started until the cavity has begun to diminish in size and the fluid comes back almost clear.

When a chronic empyema cavity is present the author softens the thick pachypleurisy by irrigating several times daily with Dakin's solution in a concentration which is gradually increased up to double the normal concentration. By proper exercises attempts are made to increase the volume of the lung. The capacity of the residual sac is measured weekly and once a week an irritating solution such as iodine and sulphate or phenol is injected to produce adhe-

sions between the pleura and thereby maintain the compensatory expansion. Even very old cases will respond to this treatment.

In the technique used by the author today, soft trocars 12 cm long are used. The sheath measures 10 cm. Trocars of two calibers are necessary: one from 10 to 11 mm and one 6 mm in diameter. Drains of the proper caliber are kept at hand. Both trocars and drains are graduated in centimeters. The intervention is very rapid, requiring only four or five minutes. The level of the effusion having been determined and a puncture made, the optimum point for the establishment of drainage is determined. At the point chosen, an injection of a 2 per cent solution of novocain is made from the skin to the pleura along the upper margin of the rib with care to avoid the vessel. When possible, the point for drainage is chosen in the posterolateral region. A bistoury with a blade sufficiently narrow to make a skin incision slightly smaller than the diameter of the trocar to be used is then introduced through the anesthetized area. The bistoury is then withdrawn and if a trocar introduced into the incision. When the mandrin is withdrawn, a jet of pus comes through the trocar. The trocar is closed with the finger and a drain of suitable size inserted, the sheath of the trocar being withdrawn gently. The drain is left in place and closed by a pressure clamp like that used to regulate the drop flow in irrigation by the Carrel method. The penetration of the drain is regulated by the centimeter graduation. It need not exceed from 5 to 8 cm. As a rule one drain is sufficient, but in some cases several drains may be required. The method of fixing the drains and the procedure of drainage are described in detail.

Lavage is begun the day after the intervention. The drainage tube is closed and the lavage tube opened. When the desired amount of fluid has been injected, the lavage tube is closed and the drainage tube is opened. Up to 100 c cm of Dakin's solution may be injected for irrigation until the fluid returns clear. If the patient coughs and complains of tasting chlorine, the lavage must be discontinued.

A solution of methylene blue is then injected into the pleura to determine whether a bronchopleural fistula is present. In the presence of a fistula the methylene blue will appear immediately in the sputum.

Cardiac tonics are administered and the associated pneumonia given appropriate treatment. In cases of dyspnea, oxygen may be administered through the nose. The lavage is continued for about eight days after the morning irrigation fluid returns clear. The drain is then cut off about 2 cm from the thoracic wall and a finger cot attached. This is left in place for several days to be sure that the temperature does not rise and that too much pus does not form. If all goes well the drain is removed at the end of that time but a probe is passed every day to keep the passage open. When the pus has disappeared and the size of the cavity has diminished to a capacity of from 5 to 10 c cm, the treatment is discontinued

for two or three days and then watched for a rise in the temperature and accumulation of pus. If all is well, time the fistula is permitted to close.

Before the condition is considered cured, a clinical control examination is made. If a cavity persists, costectomy is performed. A secondary costectomy is well tolerated and the patient is able to get up and the fixation of the mediastinum renders pneumothorax drain become clogged and Dakin's solution clear it from 150 to 200 c cm of chloric pepsin (Hermannsdorfer) digest the membranes. Persistent due to clogging of the drain, abscess of the back, secondary non-drain collections, etc., are of the undercarditis.

The author summarizes the advantages as follows:

1. It reduces the mortality.
2. It prevents the development of empyema.
3. It hinders the entrance of thorax.
4. It permits slow escape of shock or violent displacement of heart.

The technique is simple and with the patient in bed.

6. Dressings are few and simple.
7. The duration of hospitalization is short.

Ruetz. *The Treatment of (Di) Beha d des Pleur*  
Reh s h 1933 u 4 4

Every intrathoracic pressure of space brought about by a mass in the displacement of the mediastinum increases the size of the space striking in the thorax of the mediastinum is very delicate increases the space further of the diaphragm.

The displacement of the mediastinum healthy side is at first not only mechanical pressure of the effusion under negative pressure displacement. The cause of the increasing action of the healthy side other side. This process is a part of the tendency of the body. It is the respiratory movements of the thorax by the accessory muscles adequate. When the compensatory thorax ceases the pressure of the to exert its effect. This results in the elastic of the diseased lung maintain negative pressure a decrease in the air content of the

of compression atelectasis or inflammatory parenchymatous infiltration

Operative methods which produce a communication between the empyema and the external air result in open pneumothorax and thereby an acute mediastinal shift. The mediastinum flutters and compromises the circulation in the large venous trunks. Filling and emptying of the right auricle are disturbed. The circulation is acutely hindered especially in cases of empyema on the right side. The functioning of the thin walled auricle is mechanically inhibited. Dilatation of the auricle is disturbed by the failure of respiratory movements. There is a congestion of inflow and a poor cardiac flow. The most severe circulatory disturbances occur as the result of kinking of the inferior vena cava as it passes through the diaphragm. On the left side the well-developed musculature of the left ventricle offers strong resistance to the pressure of the exudate and displacement of the heart does not play so important a rôle. However in cases of large empyema the broad surface of contact which the heart presents as it hangs into the left chest favors torsion of the organ and of the great vessels.

In the treatment of empyema these pathophysiological facts must be taken into consideration. An empyema cannot be opened widely as simply as an abscess. Open thoracotomy in empyema especially in children has a high mortality. Sudden changes of intrathoracic pressure must be avoided. Careful gradual decompression must be attempted with care to preserve the closed character of the chest cavity. Three results must be obtained: (1) removal of the pus; (2) correction of the pathological intrathoracic displacements without danger to the heart and lungs; and (3) re-expansion of the lung with restoration of its physiological status.

It is important to determine whether removal of the pus or correction of the intrathoracic displacements is the more important indication. If the general body intoxication is most prominent as for example in septic pleural phlegmons and metastatic suppurative empyema consideration of the heart and lungs is of secondary importance. The chest cavity must be opened under differential pressure by rib resection and adequate drainage of the pus established. In contrast are cases of meta-pneumonic empyema in which the intoxication is not severe but there is considerable danger from mediastinal displacement. In these cases the treatment must begin with simple aspiration. Twenty minutes before the aspiration 0.05 gr of morphine is given. The aspiration is done under local anesthesia. In cases of free effusion the aspiration is done with a large cannula (record syringe) in the seventh intercostal space in the posterior axillary line. If pus is found the record syringe is replaced by a suction apparatus (two way control like that of Dieulafoy). The evacuation of from 200 to 500 c. cm. of pus is followed by considerable relief of the circulatory and respiratory difficulties. Often a single aspiration is sufficient for cure. The re-

sorptive power of the pleura improves. If the exudate recovers a second aspiration is done. Only when a toxic and very febrile condition develops and becomes steadily worse should the method of aspiration be dropped. Then one must decide whether to use open or closed drainage. If a long time (two or three weeks) has elapsed since the onset of the effusion thoracotomy with rib resection is the procedure of choice as the mediastinum has become firmer. Closed drainage is the safest procedure. Its two disadvantages are (1) arrest of drainage by plugging of the tube (fibrin formation, staphylococcus empyema) and (2) the danger of a phlegmonous inflammation of the chest wall from leakage around the tube.

After preliminary exploratory aspiration the author makes a skin incision 1 cm. long in the posterior axillary line of the seventh or eighth intercostal space. He then inserts a thick trocar into the neck of which he passes a rubber tube of about the diameter of a finger. After the obturator is withdrawn the rubber tube is passed through the trocar into the pleural cavity. In the distal end of the rubber tube attached a glass connection to a longer rubber tube ending in a soft collapsible rubber tube which is immersed in water. In this way air is excluded. A clamp is applied to the tube to regulate the amount of outflow of pus.

With the emptying out of the pus re-expansion of the lung begins. At first strong suction must be avoided on account of hemorrhages, irritative cough and the danger of rupturing cortical foci. Only after the fever has completely subsided and the flow of pus has completely stopped should the efforts of the organism be assisted (Perthes procedure). Insufflation of a spirometer or rubber bag is to be recommended. Repeated roentgenological control gives information concerning the aeration of the lung and the level of the effusion. The tube is removed after there has been no evacuation of pus for several days and the patient still remains afebrile. If the drain becomes plugged by large pieces of fibrin clot irrigation with hydrochloric acid pepsin solution or possibly rib resection may be indicated. Through a small gap in the rib a heater drain is inserted. This is made air tight and closed drainage is preserved (Stober system).

An empyema should be opened only in the hospital and under differential pressure. The mediastinum should be supported and an open pneumothorax avoided by increasing the bronchial pressure. The seventh or eighth rib is resected in the posterior axillary line after preliminary exploratory puncture. If the increased bronchial pressure drops because of the slow outflow of pus it can be increased again until there is complete re-expansion of the lung. There should be no violent blowing. The valve is set at light air pressure. The advantages of differential pressure are acceleration of healing and avoidance of residual empyema cavities. In cases of small encapsulated empyema and collections of pus of long standing open pneumothorax does no harm.



Interlobar and mediastinal empyemas require special procedures. Because of the danger of spreading the inflammation to the free pleura, a paration is dangerous. After careful localization of the exudate (dullness circumscribed, cretation) and after fluoroscopy, resection is done at the point where the exudate is closest to the parietal pleura. Opening with care not to injure the parietal pleura. Opening of the empyema is possible in the first stage only if the pleural space is closed by adhesions. If the respiratory excursions of the lung are observed under the thin pleura, the formation of adhesions is encouraged by the pus accumulation must be encouraged by the paraffin by extrapleural packing with paraffin. With the index finger, a subcostal bed is prepared for the paraffin by carefully loosening up the connection between the endothoracic fascia and the parietal pleura. A cavity about the size of the palm of a hand is prepared and filled with paraffin and the intercostal muscles between the ribs are drawn together by a silk suture to prevent extrusion of the paraffin. In the course of two or three weeks the pleurae grow together. Occasionally the pus breaks through spontaneously. The pack is then removed and the pack bed tamponed with gauze. Otherwise the pack is removed at the end of two or three weeks and the thoracotomy is applied to make an opening at the deepest point of the bed.

In cases of tuberculous mixed infection empyema (a complication of artificial pneumothorax) the chest cavity must be kept closed as long as possible. In cases of sterile effusions, repeated aspirations are sufficient to prevent great intrapleural pressure changes. Even when mixed infection supervenes, aspiration should be continued as long as the character of the pus and the condition of the patient permit. When the pus becomes thicker or rapid decomposition suppurative because of toxic absorption by the body. Brelau's syphon drainage and pepsin used. Irrigation with sodium chloride and pepsin hydrochloric acid solution rule for the treatment of residual empyema cavities. The procedure used depends on the size and position of the residual cavity and the general condition of the patient. The complete residual empyema cavities are always treated at first by an extrapleural parietal Sauerbruch thoracoplasty done in two or three stages from above downward and sometimes supplemented by phrenicotomy. If this does not suffice, the thoracic wall is removed at the next sitting by an intra-pleural procedure and more of the bony framework of the chest wall is removed so that the residual cavity is filled with soft parts. By this procedure the early high mortality, especially in cases of tuberculous residual empyema cavities in the posterior mediastinum, is reduced.

In cases of residual cavities in the posterior mediastinum region close to the vertebral bodies, anastomosis may be necessary. Bronchial fistulae are not contraindications to soft part plastics. They close spontaneously when covered by a pedicled flap of muscle and skin.

In empyema in children, the fragile mediastinum demands especially the maintenance of normal thoracic pressure relations. If possible, pus evacuation should be done only by a paration and syphon drainage. Thoracotomy should be done only under direct observation of the pleural pressure.

## ESOPHAGUS AND MEDIASTINUM

Wosher H P. Inflammation of the Esophagus in Acute and in Chronic Infection. *Laryngol* 1933 xviii 563

Fibrosis of isolated areas of the esophagus is fairly common especially in such chronic infections as arteriosclerosis. That fibrosis of the esophagus especially of the terminal portion is the result of infection from contiguous infections of the esophagus is often in evidence to the extent of ulceration. It may be infected also in acute infections such as pneumonia. Chronic infection as shown by infiltration of lymphocytes under the epithelium in the glands and about the gland ducts is common. In diseases such as cirrhosis of the liver which impede the venous circulation dilatation of the abdominal blood vessels, almost constant esophageal infections frequently cause esophageal extension. Hemorrhage into the muscular layers may occur when there is back pressure on the esophageal vessels. The glands of the esophagus are especially liable to infection and are probably the chief route of internal infection of the esophagus. P. 127 W. G. GARNER M.D.

Turner G G. Excision of the Thoracic Esophagus in Carcinoma with the Construct of an Extrathoracic Gullet. *Lancet* 1933 cccviii 15

The case reported was that of a man fifty-eight years of age who complained of difficulty in swallowing. External examination showed a constriction in the middle third of the esophagus. A roentgen ray examination showed a median incision of the stomach was opened by a median incision of the abdomen, the left esophagus carried out by anastomosis and anastomosis of the esophagus to the posterior mediastinum. The left lobe of the lung was then made through the sternum and an incision was then made through the sternum close to the growth and after ligation of the transverse aorta and the esophagus was then carefully severed. The upper end of the cancer was then removed as far down as the growth and the stump dropped into the chest. An ante thoracic esophagus was constructed by making a tube from the skin of the chest wall by the Roux-Y method. The lower end was completed by the Tarsel method with the use of an isolated part of jejunum. On the two hundred and sixth day after the excision of the esophagus the patient ate a hearty meal. J. F. DUNN M.D.

**Prost Darbols Hernion L vieratos and Brin**  
**court Mediastinal Herniae and Lipiodol**  
**Topographic Aspect (II de m h tin et**  
*l p l l l t t t p g p l q ) trel td rh*  
*d l app p r 1933 364*

Three cases of mediastinal hernia are reported in detail to show the advantages of the intrapleural injection of lipiodol for examination. Lipiodol permits localization of the hernia in the anterior mediastinum with precision. After its injection the patient should be placed in profile and the X rays passed through the body from one side to the other. In this way it is possible to see the lipiodol clearly in the single or multilobular sac in the anterior mediastinum. Lipiodol gives an idea of the shape as well as of the size of the sac. It permits recognition of anomalies of the anterior mediastinal cul de sac, exposes hidden diverticula and renders possible exact measurement of the sac. The ordinary roentgenogram will often show a regular hernia whereas the roentgenogram made with lipiodol will show sacs with more or less spacious secondary cavities.

To permit a thorough examination of the sacs and diverticula of the hernia the thorax should be inclined in different directions to distribute the lipiodol thoroughly. In exploration of the anterior mediastinal cul de sac the patient should be placed in ventral decubitus for some time before being gradually turned over on the normal side. Lipiodol also permits dissociation of the posterior mediastinal cul de sac from the anterior cul de sac of the hernia. If the patient is not properly mobilized the lipiodol will accumulate either posteriorly or anteriorly. In the vertical position it can be seen in well defined niche with an upper level. In the horizontal position it is dissociated in the base of the sac.

EDITH SCHANCE MOORE

### MISCELLANEOUS

**Bignami G Congenital Diaphragmatic Hernia**  
*(Sull'ernia diaframmica congenita) R d I med*  
*933 135*

The author reports the case of a male infant ten days old who was brought to the hospital because of respiratory, circulatory and digestive disturbance. Normal delivery was followed immediately by dyspnea of the stenotic type with intervals of suffocation which resulted in cyanosis and by vomiting which resulted in malnutrition and marked loss of weight.

Physical examination revealed general pallor and cyanosis of the lips and cheeks. The temperature was normal. The pulse was weak but regular. The thorax was greatly expanded almost in the position of forced inspiration while the abdomen was scaphoid so that the distance between the thorax and abdomen was almost precipitous. During respiration there was very little thoracic expansion and the abdominal movements were hardly noticeable. Percussion revealed over the entire left side a clear sound without any particular resonance.

The entire right side except the apex was dull. Abdominal resonance was dull everywhere. On the basis of the findings of the physical examination a presumptive diagnosis of either thoracic neoplasm or diaphragmatic hernia was made.

Roentgenographic examination revealed a shifting of the mediastinal shadow to the right and a marked and irregular transparency of the left pulmonary field without definite signs of lung structure. Closer examination of the left side disclosed gaseous loops. Examination with the aid of a barium meal demonstrated the presence of intestinal loops in the left pleural cavity. Practically the entire intestine was within this cavity. The author describes the X ray findings in great detail.

The article is concluded with a discussion of diaphragmatic herniae including their etiology and classification and their differentiation from eventration of the diaphragm. A LOUIS ROSE MD

**Sergeant E Kourlik R and Robert P Dia**  
**phragmatic Hernia of the Stomach and Colon**  
**Recurrent Pulmonary Symptoms Encysted**  
**Purulent Pleurisy Obstruction of the Ter**  
**mal Colon (Hernie diaphragmatique del t m c**  
*t du c l n accidents pulmonaires a p tition*  
*pl r s e purule t kyste obt ct col q*  
*t mun le) t ch m d c l s del pp esp 933*  
*353*

The case reported was that of a man thirty six years of age who had had a chronic cough since an attack of influenza bronchopneumonia. In 1931 he was in bed for six weeks with congestion of the left lung. In 1932 a purulent intrathoracic focus developed. Two pus cavities were found and evacuated. The pus from one was sterile while that from the other contained numerous anaerobic bacteria. Definite drainage was established.

The postoperative course was characterized by abdominopelvic thoracic and mediastinal symptoms. The complications developing included urinary retention, paralytic ileus, vomiting, obstruction and acceleration of the pulse. Elimination was finally induced and was followed by relief. Thoracic symptoms then pointed to a recurrence of the purulent collection with a rise in the temperature. Marked elevation of the diaphragm was then noted and an esophageal syndrome with a burning sensation behind the sternum and intense dysphagia developed. Drainage was established. Although the general condition was very poor and death seemed imminent the patient recovered and was discharged in good condition. However some of the X ray findings were difficult to interpret. One year later the patient was readmitted to the hospital after an attack of alimentary intoxication and alcoholic indulgence. At first vomiting occurred in attacks but later became continuous. Instantaneous regurgitation suggested dysphagia. A diagnosis of diaphragmatic hernia with obstruction of the colon was made. The patient died during operation.

The authors review the literature on diaphragmatic hernia and conclude that in the presence of an

abnormal gastric intestinal or esophageal digestive syndrome associated with acute pleuropulmonary complications unexplained by infection or the visceral state diaphragmatic hernia should be suspected and a roentgen examination should be made

EDITH SCHRAMME MOORE

Heuer G J The Thoracic Lipomata A S L  
1933 xc iii 802

The author reports a case of thoracic lipoma and reviews thirty cases collected from the literature. He divides thoracic lipomata into three groups: (1) the hour glass type in which an intrathoracic tumor is connected with an extrathoracic tumor by a narrow isthmus extending through a perforation in the chest wall; (2) mediastinal tumors which extend upward into the neck; and (3) tumors which lie entirely within the thorax. The symptoms are those common to intrathoracic tumors in general: pain in the chest, cough, dyspnea of varying degree, cyanosis and cardiac irregularity. In some cases an external portion of the tumor is found in the root of the neck, or outside the thoracic cage. Of the eight reviewed cases in which X-ray examination was definitely mentioned in the records, it revealed a shadow in the thorax in only six.

Of the thirteen cases belonging to the first two groups (presenting an external tumor) operation was done in twelve. In the untreated case death resulted from mediastinal compression. Of the twelve patients who were operated upon before the development of aseptic surgery, four died of infection.

Of the eighteen cases in which the tumor was entirely intrathoracic a positive diagnosis of intrathoracic tumor was made before operation or autopsy in only seven and a positive diagnosis of lipoma was made in only one (the author's case). Fourteen of the patients died untreated and four were operated upon. In three of the surgically treated cases the operation was followed by cure. In the fourth the removal of the tumor was incomplete and death resulted from a recurrence associated with mediastinal compression at the end of five years.

The large size of some thoracic lipomata is remarkable. The largest tumor which weighed 17 lb was reported by Leopold. On account of the slowness of their growth the tumors may reach large proportions before they give rise to pressure symptoms.

The origin of thoracic lipomata is somewhat problematical. The author believes with Coenen that lipomata of the hour glass variety are congenital. This theory is based on their early appearance in life in some cases, the difficulty of otherwise explaining their form and their direction of growth on both sides of the thoracic cage, their analogy to congenital tumors such as dermoids and teratomata, the hypoplasia of the heart and lungs and the evident duration of the symptoms.

MAURICE P MEYERS M D

Ruetz A Advances in Thoracic Surgery Lu 84  
Pleura Heart Pericardium and Diaphragm  
(Fortschritt d r Tho ar Chirurg L nge Rippen  
fell Herz Mitt fell Zwerchfell) Zt i und J Ch  
933 p 2072

In the fundamentals of the surgical treatment of pulmonary tuberculosis there has been no change. In some cases bilateral excesses of the phrenic nerve may have a favorable influence. Temporary paralysis of the phrenic nerve by anesthesia is used as a test to determine the effect of paralysis of this nerve on the lungs and circulation. To re-enforce phrenic excesses section of the scalene muscles with simultaneous resection of the first rib is proposed. In para-vertebral thoracoplasty the effect is increased by shortening the rib stumps to the transverse processes. For maximum compression of the lung complete removal of the arched portions of all of the ribs is necessary. The so-called partial collapse of the lungs should be restricted to parts of the lung which show a tendency to contract while the normal parts remain free from compression. Apical thoracoplasty alone is often ineffective when the dome of the pleura is adherent to the vertebrae and trachea. Under these conditions apicolysis is necessary. The danger of aspiration in partial thoracoplasty may be reduced by pre-operative anesthetization of the phrenic nerve. Treatment by packing is of value in pulmonary tuberculosis provided the cases are properly selected.

In discussing anesthesia for thoracoplastic operations the author calls attention to Borthers' reduction anemia induced with large doses of adrenalin.

In the treatment of lung abscesses pneumothorax has been almost completely abandoned. Conservative methods have also failed. The author discusses the principles and technique of operation.

The great majority of bronchiectases especially those of the left lower lobe are congenital. Bronchiectases of the apex suggest tuberculosis. Hemoptysis is more frequent in bronchiectasis than in tuberculosis. Cure of bronchiectasis can be obtained only by destroying or removing the diseased tissue. Certain important considerations are against the treatment of bronchiectasis by pneumothorax after failure of this procedure: other operative procedures are useless as obliteration of the pleural space is no longer effective. Phrenicotomy has a favorable effect in cases with hemoptysis or a constant cough.

The clinical picture of massive collapse of the lungs includes a high elevation of the temperature (usually in the third day after an abdominal operation), dyspnea, a dry cough, pain in the chest and rapid respiration. It is caused usually by a unilateral inflammatory mechanical occlusion of the bronchial tube.

Of the malignant tumors of the lungs only 10 per cent are suitable for operation, namely those which originated in a small bronchus and have infiltrated only a small amount of lung tissue. Accordingly early diagnosis is important. To determine the op-

erability of a case a test thoracotomy is essential. By the induction of artificial pneumothorax three weeks before operation the sensitivity of the heart and lungs and the tendency of the pleura to become infected are diminished. In dogs the introduction of a 35 per cent solution of silver nitrate from eight to fourteen days before extirpation of the pulmonary lobe causes narrowing or occlusion of the bronchus.

In spite of numerous new methods good results from operative treatment of carcinoma of the œsophagus are just as infrequent as ever.

œsophageal diverticula are generally operated upon in one stage.

Experimental studies have shown that in suturing of the œsophagus it is the suture material which is responsible for leaks at the suture line. In experiments on cats the use of a suture of vaselined silk No. 000 was always followed by primary wound healing.

The mortality of sutured heart injuries is about 25 per cent. Late sequelæ of cardiac suturing have not been demonstrated clinically, roentgenologically, or electrocardiographically.

The development of cardiac failure in man has been extensively reproduced in animals. Moreover, by artificially changing the size of the heart it has

been possible to influence states of cardiac insufficiency.

In the surgical treatment of changes in the valves of the heart no further progress has been made.

As the superficial and deep sensibility of the inner side of both leaves of the pericardium is very slight local anesthesia is sufficient. However, Leriche has been able to elicit a depressor reflex by mechanical irritation of the internal wall of the pericardium. As the atmospheric pressure may have a marked effect on the beating of the exposed heart the author recommends the use of Sauerbruch's negative pressure chamber and warns against positive pressure.

For drainage in purulent pericarditis Cottam resects the right fifth costal cartilage and introduces a rubber drain from behind forward. In exudatous pericarditis pericardiectomy by the method of Wahl is generally regarded as the procedure of choice for all difficult cases. However, some surgeons prefer the chest window method because it has a lower mortality. The late results of removal of the pericardium are quite unfavorable because of persistence of the basic disease.

Studies of the innervation of the diaphragm have shown that the motor neurons and even autonomic nerves (vagus) have a definite trophic influence.

BLUMENSAAT (Z)

# SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM  
Mensing E H Peritonitis Am J Surg 1933  
xxii 478

This article on the treatment of peritonitis based on the pathological physiology involved is summarized as follows

Peritonitis can usually be divided into an early formative or absorptive stage during which bacteremia and bacterial toxemia preponderate and the fully developed later stage in which circulatory disturbances and inhibition ileus enter into the picture

The most important factors entering into the production of symptoms are (1) bacteremia and toxemia (2) dehydration and demineralization (3) reflex symptoms of nausea, anorexia and general depression (4) inhibition ileus (5) circulatory disturbances (6) anoxemia and (7) starvation

The most important local defensive factors against peritoneal infection are phagocytosis, the formation of a fibrinous exudate and early localized intestinal inhibition. The general antibacterial activities are interfered with by anhydremia, demineralization and disturbances of the acid base balance, anoxemia and circulatory disturbances

The surgical treatment involves the early removal of the focus of infection with care not to disturb the local defensive mechanisms

Dehydration and demineralization are treated by means of normal saline, Ringer's and Hartmann's solutions

The anoxemia, treated by correcting circulatory disturbances and by the early use of oxygen inhalations

To increase the colloid osmotic pressure of plasma when shock exists 6 per cent sodium solution with minute doses of pitressin are to be used

Suprarenal cortex extract may be of value

Fluids for peritonitis because they stimulate gut activity. However fluids may be given by mouth any stage of peritonitis because they stimulate gut activity. However fluids may be given by mouth during the time that duodenal intubation with suction is applied

Proctoclysis and enemas are contra indicated in the early cases of peritonitis due to gangrenous appendicitis when physiological rest of the cecum is most desirable

Morphine is needed to control pain. It is doubtful whether deep morphinization has any specific beneficial effect in peritonitis and its deleterious effect upon the respiratory mechanism as well as upon the immune reactions must be borne in mind

The planchonic vasomotor paralysis may be treated in the early stages only by means of small doses of epinephrine. Ephedrine also probably lessens weeping from the peritoneum and plasma loss

into the intestine and its inhibitory effect upon peristalsis is of advantage during the early stages

Inhibition ileus and distention are treated by duodenal intubation and the intravenous administration of hypertonic salt solution. The stimulating effect of hypertonic salt solution upon peristalsis and intestinal motility contra indicates its use in the early formative stages

Glucose solutions are especially indicated during the starvation stage

Fowler's position is of definite value during the early formative stages. Later the state of the circulation and the patient's comfort should determine the position of the patient

During the early formative stages of peritonitis mild X-ray treatment is probably indicated because it raises the anti-bacterial defense mechanisms

The possibility of the occurrence of a mechanical obstruction in peritonitis from linking of the bowel, localized abscess or a plastic exudate must be borne in mind. Enterotomy is indicated only after the simple method of duodenal intubation with suction has been given a trial

Spinal anesthesia is contra indicated during the early absorptive stages of peritonitis because of its stimulating effect upon peristalsis. Either is contra indicated during all stages of peritonitis

The inefficiency of drainage in general peritonitis cases is discussed briefly

ELLE STRAUS

## GASTRO INTESTINAL TRACT

Florey H W and Harding H E The Functions of Brunner's Glands and the Pyloric End of the Stomach J Path & Bacteriol 1933 xxxv 411

In the experiments reported in this article the properties of duodenal secretions and the reactions shown by Brunner's glands and the pyloric glands in the rabbit, guinea pig rat and cat were investigated. In the rabbit duodenal loops were isolated between the point of entrance of the biliary and pancreatic ducts so that both bile and pancreatic juice were excluded and the duodenal secret on could be collected. The duodenal secretion was found to be a clear slightly opalescent mucous juice with the consistency of egg white. It was apparently homogeneous and could be diluted with water. Its most remarkable feature was its high carbonate content. Colorimetric hydrogen ion estimations showed a pH of from 8.0 to 8.2. This secretion was interpreted as being that of Brunner's gland in the duodenum because when similar loops of ileum were prepared no fluid was secreted and the loops of bowel were collapsed whereas the duodenal loops were distended. The injection of pilocarpine had no marked effect on the quantity secreted. When the planchonic

nerves were severed just below the diaphragm or the vagi were cut in the neck the secretion was the same or possibly even greater. The production of the thick fluid resembling egg white can therefore continue after severance of both the main nerve trunk supply to the abdomen. Atropin alone apparently did not inhibit the secretion but after section of the splanchnics it apparently had an inhibitory effect. Histamine did not increase the amount of secretion. Neither did surgical removal of the stomach. Feeding or starving of the animals did not alter the secretion. Histological evidence of exhaustion in the cell was suggested by the fact that secretion was formed in the cell at about the same rate as it was expelled. Perfusion of the duodenal loop with hydrochloric acid increased the secretion. Secretion with neutralization of the perfusing hydrochloric acid still occurred after section of both vagi and splanchnics.

In the cat perfusion experiments showed no damage to the surface epithelium of the stomach after treatment with strong or weak acid. In the duodenum however considerable damage by  $N/10$  acid was found. The tips of the villi were stripped of epithelium and in some cases microscopic superficial ulcers were produced. Perfusion with  $N/10$  acid caused no duodenal damage.

In addition to the neutralizing effect of the duodenal secretion from Brunner's glands the authors review data presented by other investigators with regard to the mechanical protection afforded by mucus emphasizing the importance of this alkaline secretion in protecting the gastric and duodenal mucosa and suggesting a possible relation between failure of secretion and the development of peptic ulcer.

S. WELLS, J. F. ELSON, M.D.

**Guecl G. Chronic Gastritis (Sull. gastrite)** (ca)  
Pitt. Rom. 933 J. chir. 607

The author reports the case of a woman fifty years of age who had complained of dull epigastric distress with vomiting for three months. Roentgen examination revealed a filling defect on the greater curvature of the stomach. The diagnosis of an infiltrative lesion of the stomach was made. Subtotal gastrectomy was followed by an uneventful recovery.

Examination of the resected specimen disclosed in the body of the stomach an area in which there were mammillary projections separated by patches of smooth mucosa. Histological examination of this area showed the muscular layer relatively uninvolved except for a moderate perivascular infiltration. The submucosa presented no unusual changes. The mucosa particularly in the portion beneath the muscularis showed an infiltration with mononuclear polymorphonuclears and plasma cells. A more pronounced infiltration was found in the lower portion of the mucosa around the cul-de-sac of the gland tubules where in places it appeared to form small abscesses and extended into the connective tissue space between the individual tubules. The epithelial covering on the surface of the mucosa had

been replaced by a very vascular granulation tissue with islands of gland tubules.

In sections of the specimen the gastric glands seemed to have undergone a metaplasia and had assumed the appearance of cells of intestinal mucosa such as are found in the crypts of Lieberkuhn.

PETER A. PORTER, M.D.

**Finocchiaro Amantia G. Gastro Intestinal Amœbiasis** (Am. b. i. g. st. o. intestinale in chru.) J. Chir. tal. d. ch. 1933 v. 88

Amantia reports two cases in which the endamoeba histolytica was found in the stool of patients with a roentgenologically demonstrated gastric ulcer. These patients were treated for the amœbiasis with emetin and later subjected to gastro-enterostomy for relief of the ulcer symptoms. Both recovered uneventfully.

Also reported are three cases in which characteristic ulcer symptoms were associated with the presence of amœbæ in the stools but ulcer was not demonstrated on roentgen examination. As the symptoms subsided under emetin therapy Amantia believes that the condition was an amœbic gastritis.

From a review of the association of amœbæ with appendicitis Amantia concludes that in chronic appendicitis medical treatment should be given whereas in acute appendicitis immediate surgery should be done and followed by specific therapy against the endamoeba.

PETER A. PORTER, M.D.

**Melzer M. A. Acute Intestinal Obstruction**  
Tenth Int. tallment. J. Surg. 933 v. 49

The mortality of intestinal obstruction is high. In 335 cases of acute intestinal obstruction seen in the Massachusetts General Hospital the mortality was 31 per cent. In cases of acute mechanical obstruction except those due to neoplasm or strangulated external hernia it was 47 per cent. In cases due to neoplasms it was 31 per cent and in those due to strangulated external hernia it was 28 per cent. In comparing the mortality rates in ten year periods in the same hospital the author found that whereas the mortality decreased in the period from 1903 to 1917 it had changed little since then.

The most important factor in the mortality is the time elapsing before operation. In the cases operated upon at the Massachusetts General Hospital less than twenty-four hours after the onset of the condition the mortality was 17 per cent in those operated upon from twenty-four to forty-eight hours after the onset it was 35 per cent and in those operated upon more than forty-eight hours after the onset it was 60 per cent. Interference with the circulation of the bowel also increases the mortality. In cases with this complication the mortality was 53 per cent whereas in cases without this complication it was 37 per cent. The mortality varies also with age. In the cases of patients less than a year old it was 60 per cent and in those of patients over fifty years old it ranged from 55 to 100 per cent.

The modern treatment of the dehydration associated with intestinal obstruction results in little

decrease in the mortality as compared with the mortality in the periods before careful pre-operative preparation was given. McIver's explanation for this is that simple high obstruction in which experimentally salt solution is so efficacious in prolonging life is seldom seen in man and whenever there is interference with the blood supply of the gut dehydration plays a secondary rôle and correction of the dehydration does not prevent the development of toxæmia. The mortality is lower in cases of obstruction caused by neoplasms because the tumor does not interfere with the circulation of the gut. Of the cases of hernia reviewed the mortality was highest in those of umbilical and ventral hernia in which it was respectively 44 and 33 per cent.

In discussing the causes of death McIver presents a number of theories. He believes however that dehydration and hypochloræmia play etiological rôles in relatively few cases and only in those of high obstruction. ALTON OCHSNER, M.D.

McIver M. A. Acute Intestinal Obstruction. Eleventh Installment. *Am J Surg* 1933 xii 373.

A number of theories have been advanced to account for the deaths from intestinal obstruction. Many believe that especially in cases with damage to the bowel wall and mucosa a toxin originating in the bowel is responsible. There is no question that the contents of the bowel above the obstruction are toxic and that the toxins are absorbed into the blood stream. The nature of the toxins has been debated by numerous investigators. It has been quite definitely shown that the symptoms of high bowel obstructions are due to the loss of intestinal secretions and not to toxæmia as was previously thought. Excellent experimental evidence has been presented to prove that the toxin in the lumen of the intestine is derived from bacterial action. However the Welch bacillus probably plays only an insignificant rôle or no rôle at all. ALTON OCHSNER, M.D.

McIver M. A. Acute Intestinal Obstruction. Conclusion. *Am J Surg* 1933 xvii 579.

That absorption of the toxin in acute intestinal obstruction never occurs from the normal mucosa is evident from the fact that the injection of highly toxic material into the lumen of the intestine of normal animals produces no symptoms. However following changes in the mucosa due usually to interference with the blood supply to the gut the toxic material is absorbed. The absorption may be brought about by increased intra intestinal pressure or interference with the blood supply. The route by which the toxins are absorbed from the lumen of the bowel has not been proved. Three possibilities are: (1) the blood stream (2) the lymphatics and (3) the general peritoneal cavity.

Relatively recently the importance of dehydration and loss of chlorides in intestinal obstruction especially obstruction high in the intestinal tract has

been emphasized. Stagnation of blood in the splanchnic area and anæmia of the vital centers is thought by many to be the cause of symptoms and death. In considering death in intestinal obstruction it is important to differentiate between the levels at which the obstruction occurs. In high obstruction, death is due to loss of fluids and electrolytes. In simple low obstructions of the small intestine the marked distention of the bowel causes interference with the blood supply to the intestine which probably favors the development and absorption of toxins. In obstruction in the colon death is probably brought about in the same way. In cases of strangulation it is due to the production and absorption of toxins and possibly the development of peritonitis.

ALTON OCHSNER, M.D.

Best R. R., Newton L. A. and Meldinger R. Absorption in Intestinal Obstruction. *Am J Surg* 1933 xvii 1081.

It is now the opinion of most authorities that in intestinal obstruction may be classified either as simple obstruction or as obstruction with gangrene or interference with the blood supply. There is a gross difference between the two conditions. The presence of a toxic element in the second type is indisputable. The evidence indicates that in simple obstruction a definite toxin is not the cause of death.

In early reports great emphasis was placed on the presence of a newly formed and exceedingly toxic substance in the fluid contents above the obstruction and an increase of absorption resulting from increased pressure and changes in the mucous membrane. Since these reports a great many investigators have attempted to prove that death is caused by a toxin absorbed above the level of the obstruction in combination with a disturbance of the acid base equilibrium.

Wangensteen demonstrated by careful experiments that the contents of the normal and the obstructed intestine are equally toxic, and that the contents below the obstruction are apparently even more toxic than those above it. The rate of absorption and the selectivity from above or below the obstruction were not considered in these experiments.

It seems logical to the authors that if no specific toxin is present in obstructed loops free from gangrene the lethal factor must be either increased absorption of substances normally present in the intestine or the failure of a neutralization process or buffer reaction which would ordinarily occur when the contents of the upper and lower intestines mingle. It is possible also that this failure may affect the function of the secretion of the intestinal mucosa and in some manner play a rôle in the causation of death.

Since considerable evidence has been presented to disprove the presence of a specific toxin in the obstructed intestine the authors concluded that if absorption above the obstruction could be shown to be decreased or at least not increased there would be some evidence that the cause of death is the fall

ure of a neutralization process or buffer reaction to take place as it would normally when the different levels of intestinal contents mingle.

The authors were unable to demonstrate any increase in the rate or selectivity of absorption above or below the level of obstruction. If we accept Wangensteen's finding that normal intestinal contents are as toxic as the contents above and below an obstruction, it may be assumed that there is no specific toxin which develops after the onset of obstruction. Wangensteen's experiments suggest that there is no increase in the rate or selectivity of absorption above the obstruction and this seems strong evidence that the increased absorption above the obstruction cannot be the cause of death. Wangensteen's experiments tend also to rule out the probability of increased absorption below the obstruction.

The authors therefore believe it to be within the realm of probability that death following intestinal obstruction is due to a failure of neutralization or buffer reaction to take place between upper and lower intestinal contents in the lower part of the intestine. This need not be interpreted in terms of the development of a definite toxin; it is rather a physicochemical reaction that usually takes place when the contents of the upper and lower parts of the intestine are permitted to intermix. With this phenomenon there occurs absorption or failure of absorption of a substance which causes a disturbance not in accord with normal cellular function and incompatible with life. The best clinical evidence in support of this theory is the fact that an obstruction of the distal colon is compatible with life for some time. This may be explained by the fact that the intermixture of upper and lower intestinal contents has already occurred above the obstruction and absorption has taken place. If the obstruction occurs above the distal colon in the more active secreting levels and the absorption area, death occurs earlier than when the obstruction occurs lower.

ARTHUR L. SHAFER, M.D.

Wangensteen O. H. and Palne J. R. Treatment of Acute Intestinal Obstruction by Suction with the Duodenal Tube. *J. Am. Med. Ass.* 1933 1: 1432.

The authors have shown that partial acute obstruction of the small intestine may almost invariably be dealt with satisfactorily by decompression with the duodenal tube alone. In most instances of subacute obstruction whether in the small intestine or in the colon suction with the duodenal tube serves adequately in the obstructive phase. In many late cases of simple obstruction of the small intestine in which the obstructive mechanism continues to operate decompression with the duodenal catheter will relieve the patient a better operative risk.

Moreover there are two types of obstruction in which the use of the method is contra-indicated: (1) strangulation of obstruction and (2) acute obstruction of the descending colon with enormous disten-

tion of the proximal colon. The latter is essentially a strangulation obstruction as the competent proximal ileocolic sphincter usually precludes regurgitation into the small intestine and limits the distention to the colon and necrosis, gangrene, and perforation occur in the cecum unless the colon is decompressed.

In addition to these absolute contra-indications there are a number of relative contra-indications. In cases of obstruction due to strictures in the intestine whether of a simple or a malignant nature it is obvious that a direct attack must be made on the obstructive mechanism whether or not decompression of the acute obstruction can be effected by the duodenal catheter. In cases of complete adhesive obstruction of the lower portion of the small intestine decompression by the duodenal tube alone may fail and after a reasonable trial if roentgenograms do not demonstrate definite diminution of the distention, recourse should be had to enterostomy. The appearance of gas in the colon in complete obstruction indicates not only a satisfactory decompression but also automatic re-establishment of the continuity of the bowel.

By the occurrence of loud intestinal borborygmi heard with the stethoscope at the acme of intermittent crampy pain, the presence of intestinal colic is established. Though intestinal noises may be heard in other colics or acute lesions of the abdomen, there is in these no intimate time relation between the pain and borborygmi as there is in obstruction of the bowel.

The salient features in the diagnosis of acute obstructions are discussed. Vomiting is usually a prominent symptom in all acute obstructions of the small intestine. That the conspicuous vomiting of obstruction is essentially regurgitant is indicated by its frequent absence in acute obstructions of the descending colon in which the small intestine often does not participate in the distention. Cases of simple obstruction ordinarily present no tenderness or rigidity of the abdominal wall. In strangulation obstructions, with the single exception of intussusception in which the strangulated intestine is within the normal ensheathing cylinder, rebound tenderness may be demonstrated. In simple obstructions the general condition is not disturbed until late. Patients with strangulation obstruction occasionally exhibit an early increase in the pulse rate due to loss of blood into the peritoneal cavity and the infarcted segment of intestine. Diminution of the blood chlorides, elevation of the non-protein nitrogen and alkalosis occur consistently only in high obstructions and then only after persistent vomiting.

When correlated with clinical signs the X-ray findings are of aid in determining not only the presence of obstruction but also its location and whether it is incomplete or complete. The visualization of gas in the small intestine of the adult indicates stasis. The stethoscope tells whether the stasis is mechanical or paralytic. In a case of intestinal colic in which the distention is limited to the colon, the diagnosis of obstruction in the descending colon is



decrease in the mortality as compared with the mortality in the periods before careful pre-operative preparation was given. McIver's explanation for this is that simple high obstruction in which experimentally salt solution is so efficacious in prolonging life is seldom seen in man and whenever there is interference with the blood supply of the gut dehydration plays a secondary rôle and correction of the dehydration does not prevent the development of toxæmia. The mortality is lower in cases of obstruction caused by neoplasms because the tumor does not interfere with the circulation of the gut. Of the cases of hernia reviewed the mortality was highest in those of umbilical and ventral hernia in which it was respectively 44 and 33 per cent.

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been emphasized. Stagnation of blood in the splanchnic area and anemia of the vital centers is thought by many to be the cause of symptoms and death. In considering death in intestinal obstruction it is important to differentiate between the levels at which the obstruction occurs. In high obstructions, death is due to loss of fluids and electrolytes. In simple low obstructions of the small intestine the marked distention of the bowel causes interference with the blood supply to the intestine which probably favors the development and absorption of toxins. In obstruction in the colon death is probably brought about in the same way. In cases of strangulation it is due to the production and absorption of toxins and possibly the development of peritonitis.

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It seems logical to the authors that if no peptic toxin is present in obstructed loops free from gangrene the lethal factor must be either increased absorption of substances normally present in the intestine or the failure of a neutralization process or buffer reaction which would ordinarily occur when the contents of the upper and lower intestines mingle. It is possible also that this failure may affect the function of the secretion of the intestinal mucosa and in some manner play a rôle in the causation of death.

Since considerable evidence has been presented to disprove the presence of a peptic toxin in the obstructed intestine the authors concluded that if absorption above the obstruction could be shown to be decreased or at least not increased there would be some evidence that the cause of death is the fail-

ure of a neutralization process or buffer reaction to take place as it would normally when the different levels of intestinal contents mingle.

The authors were unable to demonstrate any increase in the rate or selectivity of absorption above or below the level of obstruction. If we accept Wangenstein's finding that normal intestinal contents are as toxic as the contents above and below an obstruction it may be assumed that there is no specific toxin which develops after the onset of obstruction. Wangenstein's experiments suggest that there is no increase in the rate or selectivity of absorption above the obstruction and this seems strong evidence that the increased absorption above the obstruction cannot be the cause of death. Wangenstein's experiments tend also to rule out the probability of increased absorption below the obstruction.

The authors therefore believe it to be within the realm of probability that death following intestinal obstruction is due to a failure of neutralization or buffer reaction to take place between upper and lower intestinal contents in the lower part of the intestine. This need not be interpreted in terms of the development of a definite toxin; it is rather a physiochemical reaction that usually takes place when the contents of the upper and lower parts of the intestine are permitted to intermix. With this phenomenon there occurs absorption or failure of absorption of a substance  $\lambda$  which causes a disturbance not in accord with normal cellular function and incompatible with life. The best clinical evidence in support of this theory is the fact that an obstruction of the distal colon is compatible with life for some time. This may be explained by the fact that the intermixture of upper and lower intestinal contents has already occurred above the obstruction and absorption has taken place. If the obstruction occurs above the distal colon in the more active secreting levels and the absorption area death occurs earlier than when the obstruction occurs lower.

ARTHUR L. SHEFFLER, M.D.

Wangenstein O H and Paine J R. Treatment of Acute Intestinal Obstruction by Suction with the Duodenal Tube. *J Am Med Ass* 1933; 1: 532.

The authors have found that partial acute obstructions of the small intestine may almost invariably be dealt with satisfactorily by decompression with the duodenal tube alone. In most instances of such acute obstruction, whether in the small intestine or in the colon, suction with the duodenal tube serves adequately in the obstructive phase. In many late cases of simple obstruction of the small intestine in which the obstructive mechanism continues to operate, decompression with the duodenal catheter will render the patient a better operative risk.

Theoretically there are two types of obstruction in which the use of the method is contra-indicated: (1) strangulation obstruction and (2) acute obstruction of the descending colon with enormous disten-

tion of the proximal colon. The latter is essentially a strangulation obstruction as the competent proximal ileocolic sphincter usually precludes regurgitation into the small intestine and limits the distention to the colon, and necrosis, gangrene and perforation occur in the caecum unless the colon is decompressed.

In addition to these absolute contra-indications there are a number of relative contra-indications. In cases of obstruction due to strictures in the intestine, whether of a simple or a malignant nature, it is obvious that a direct attack must be made on the obstructive mechanism, whether or not decompression of the acute obstruction can be affected by the duodenal catheter. In cases of complete adhesive obstruction of the lower portion of the small intestine, decompression by the duodenal tube alone may fail and after a reasonable trial if roentgenograms do not demonstrate definite diminution of the distention, recourse should be had to enterostomy. The appearance of gas in the colon in complete obstruction indicates not only a satisfactory decompression but also automatic re-establishment of the continuity of the bowel.

By the occurrence of loud intestinal borborygmi heard with the stethoscope at the acme of intermittent crampy pain, the presence of intestinal colic is established. Though intestinal noises may be heard in other colics or acute fusions of the abdomen, there is in these no intimate time relation between the pain and borborygmi as there is in obstruction of the bowel.

The salient features in the diagnosis of acute obstructions are discussed. Vomiting is usually a prominent symptom in all acute obstructions of the small intestine. That the conspicuous vomiting of obstruction is essentially regurgitant is indicated by its frequent absence in acute obstructions of the descending colon in which the small intestine often does not participate in the distention. Cases of simple obstruction ordinarily present no tenderness or rigidity of the abdominal wall. In strangulation obstructions, with the single exception of intussusception in which the strangulated intestine is within the normal ensheathing cylinder, rebound tenderness may be demonstrated. In simple obstructions the general condition is not disturbed until late. Patients with strangulation obstruction occasionally exhibit an early increase in the pulse rate due to loss of blood into the peritoneal cavity and the infarcted segment of intestine. Diminution of the blood chlorides, elevation of the non-protein nitrogen and alkalosis occur consistently only in high obstructions and then only after persistent vomiting.

When correlated with clinical signs, the X-ray findings are of aid in determining not only the presence of obstruction but also its location and whether it is incomplete or complete. The visualization of gas in the small intestine of the adult indicates stasis. The stethoscope tells whether the stasis is mechanical or paralytic. In a case of intestinal colic in which the distention is limited to the colon, the diagnosis of obstruction in the descending colon is

practically established. If loops of small intestine are distended but gas is present also in the colon the patient probably has a partial obstruction of the small intestine. Distention of the small intestine alone without visible gas in the colon means that the obstruction is complete.

The factors that influence the exact determination of the location of the obstruction by X-ray examination are probably these: (1) shortening of the bowel; (2) increased weight of the coils incident to the collection of fluid within them; the extent of the placement being limited by the length of the mesentery; and (3) the distribution of gas and fluids within the distended coils. Gaseous collections will be readily apparent whereas a segment of intestine distended by fluid alone cannot be detected.

The nearer the drainage vent is placed to the site of the obstruction the more adequate and complete will be the decompression. The authors cut extra holes in the duodenal tube as far back as 10 inches proximal to the tip of the catheter. With the end of the catheter in the duodenum continuous suction may then be executed simultaneously on both in the testicular canal and stomach. Occasionally it is possible to intubate the pyloric sphincter. Water sue catheter. Inhalations of the pyloric pressure of 75 cm to aid in relaxing the pyloric pressure of the manum equivalent to a negative range of the progress of de of water lies within the range of the progress of de value. It is important to follow the progress of de compression by roentgenograms made at a certain degree of distention no pain will be noticed if there is no increase in the distention. Mere cessation of pain does not mean a successful issue. In the authors' cases the use of narcotics or sedatives for the relief of pain is avoided. Hot packs are employed routinely.

No fluid is permitted by mouth while the suction is in progress. From 3000 to 4000 c.c.m. of salt solution with a 5 per cent content of dextrose are given intravenously by the drip method. The patient is permitted to suck ice or chew gum or lemon to stimulate the flow of saliva.

In 20 cases in which decompression was effected by suction alone there were 3 deaths. In 11 cases in which decompression was effected by suction but operation was subsequently performed because of the persistence of an obstructing mechanism there was 1 death.

Butler R. W. Obervations upon Multiple Intra mesenteric Diverticula of the Small Intestine. *B. J. Surg.* 933 ix 329

Multiple intramesenteric diverticula must be distinguished from other types of diverticula which occur at the mesenteric border of the small intestine such as Meckel's diverticula, congenital pouches and vestigial and de clopmental cysts and diverticula. They are rare and usually found accidentally at postmortem examination after death from some other condition. The author's report is based on an

analysis of 20 cases. The average age of the patients was sixty four years. The condition is probably rare before the age of forty. No case of multiple intramesenteric diverticula of the small intestine has been reported.

The condition is characterized by the occurrence of a number of diverticula (as many as 400 have been found in 1 case) in the jejunum and ileum. The larger diverticula occur proximally. The diverticula vary in size from small conical pockets the size of a pea to large globular diverticula 7 cm or more in diameter. All except the very small ones have thin walls. They occur at or near the mesenteric border. They occur at or near the mesenteric border. The large ones bulging from the side of the mesentery and at times overlapping the side of the mesentery from a point at which one of the vasa recta reaches the bowel wall. The openings between the bowel and diverticula are large.

Clinically the cases may be divided into 3 groups: (1) those in which the condition is discovered by accident perhaps at postmortem examination has produced no symptoms and is in no way related to the cause of death; (2) those in which the diverticula produce definite symptoms in which the diverticula produce definite symptoms (8 of the cases reviewed); and (3) those in which symptoms of any kind have been slight and treatment is sought because of an urgent abdominal emergency directly related to the diverticula.

Abdominal symptoms are not distinctive. In 1 of the author's cases X-ray examination showed multiple fluid levels with a gas bubble above each six hours after a barium meal. The diverticula were seen to be almost free of barium at the end of ten hours and the small bowel emptied in normal time. These findings support the theory based on anatomical ground that because of the wide opening the sacs will not retain the fluid bowel contents for long. Although this X-ray picture is typical when it occurs X-ray examination is of little diagnostic aid as the diverticula do not fill readily after the ingestion of an opaque meal and in most cases can not be visualized.

The author believes that if the condition is accidentally discovered by X-ray examination in a person in whom it is producing no symptoms it should not be treated surgically. However if troublesome symptoms are present operation is justifiable since a complete resection of the affected area will result in cure. If resection is impossible short-circuiting operation may relieve the symptoms until resection can be done. In cases in which symptoms have recently appeared for the first time conservative medical treatment should be tried before surgical measures are advised.

Acute complications are not common. As might be expected they are usually inflammatory in nature. In some cases perforation of the sacs occurs. If the presence of diverticula is not known the complications cannot be accurately diagnosed.

In microscopic examination of tissue from 4 cases the author found that in every instance the wall of

the sac was composed of both longitudinal and circular muscle coats in addition to mucous membrane and peritoneum. The muscle coats are more evident in the smaller diverticula but muscle cells though few can be made out even in the apices of the larger diverticula. The author believes that the apparent absence of muscle fibers described in the literature is due to the fact that as the sac enlarges the muscular layers are stretched and attenuated so that after the diverticula attain 1 cm in diameter the mucous membrane and the muscularis mucosae herniate between the fibers of the main muscular coats. The fact remains that at the start the diverticula consist of all coats of the bowel. In the larger diverticula the mucous membrane also shows evidence of stretching. It becomes thinner and the villi are fewer, shorter and flattened. Sections of the vasa recta in the invaginated areas were not convincing some showing subintimal thickening and sclerosis of the walls while others appeared normal.

From the standpoint of etiology the following facts are of importance:

1. These diverticula are not found in infants or young persons.

2. They occur in elderly persons or persons past middle age and often appear in the process of progressive formation.

3. Their points of origin at the mesenteric border bear a definite relationship to the vasa recta.

4. When small they consist definitely of all coats of the bowel wall, being true diverticula of the bowel wall, not hernial protrusions of mucous membrane.

The first 2 facts rule out a congenital origin. Since the main trunk of the mesenteric vessel does not penetrate the muscle coats of the bowel at the mesenteric border but enters at the sides of the bowel the herniation theory is not tenable. This hypothesis is ruled out also by the last fact cited.

Therefore in the author's opinion the 2 main etiological possibilities are traction on the bowel from without and increased intra-intestinal pressure acting from within. Butler believes that he has satisfactorily demonstrated experimentally that both of the factors acting together can produce the condition. In fresh postmortem material the jejunum and the mesenteric arteries through the superior mesenteric artery were tensely distended with plaster of Paris cream. As the bowel is stretched the loop tenfold straightened out and when it is tensely stretched the mesentery enters in the convexity of the loop formed a diaphragm pulled taut all around it, circumference the vasa recta being thus stretched. Roentgenograms of the specimens following diverticulopexy at the point of attachment of the vasa recta. These diverticula consisted of all of the coats of the bowel wall and were clearly tract in packets. Further tension of the bowel resulted in rupture of the muscle coats with subsequent herniation of the mucous membrane. Butler is unable to produce the results in specimens removed from persons under twenty years of age. It appears to him that arteriosclerosis of the

mesenteric vessels may be an important factor in the formation of the diverticula as this would lessen the elasticity of the vessels thus increasing the traction effect. T. BAXFORD JONES M.D.

Koster H. Intussusception. *Am J Surg* 1933 465

The author reports 5 cases of intussusception due to a benign tumor. Four of the patients were children. It is estimated that polyps are present in 5 per cent of cases of intussusception. In the small intestine malignant tumors are about half as numerous as benign tumors whereas in the large intestine the frequency of benign and malignant tumors is about equal.

From a review of the literature the impression is gained that intussusception is primarily a condition of infancy which occurs most frequently in well-nourished usually breast-fed infants. Its onset is often preceded by diarrhea or an error in diet. Castor oil may be an important factor in its production by causing violent and irregular peristaltic contractions.

Nothnagel and Fropping produced intussusception in animals by stimulating a segment of the intestine with the faradic current. Fraser pointed out that the motor and inhibitory nerves of the large intestine as far as the lower end of the pelvic colon are derived from the sympathetic nervous system alone and that intussusception occurs most often at the point of the intestinal tract where the nerve control changes from a double supply consisting of sympathetic and parasympathetic fibers to a single nerve supply. He believes that derangement of innervation is the cause of intussusception in early childhood. Meltzer and Auer showed that the "rush" wave is a true peristaltic wave with a contraction preceded by complete relaxation of a segment of intestine. Intussusception is not likely to occur unless with such a derangement of nerve distribution there is a structural peculiarity of the intestine or its attachment which would predispose to it. In cases of ileocecal or ileocolic intussusception a mesentery to the cecum and ascending colon is discovered constantly. Another structural factor to which Fraser calls attention is the strong muscular intestine which is found in the well-developed child in whom intussusception is most frequent. Terrin and Lindsay maintain that intussusception occurring in the ileocecal region is due to abnormal amounts of lymphoid tissue which in turn comes from a change from breast milk to other foods producing gas or intestinal disturbances with associated lymphatic hyperplasia.

The ordinary intussusception occurs in a downward direction. Ascending intussusception is rare.

In an analysis of 321 cases of intussusception in infants Weiss found that 24 per cent were of the enteric, 42 per cent of the ileocecal, 30 per cent of the ileocolic and 4 per cent of the colic variety.

Because of the mechanics involved the local pathological changes in intussusception are con-

considerably different from those in other cases of acute intestinal obstruction. The original changes being gunning as edema and extravasation of the blood may soon pass into necrosis and gangrene. The swelling is most marked at the apex and along the convexity of the intussusception. There is increased permeability of the intestinal wall to bacteria. Gangrene is much more likely to occur and occurs much earlier in the intussusceptum than in the intussusciens.

With few exceptions the symptoms are similar to those resulting from intestinal obstruction. All are referable to the sudden occlusion of the lumen of the intestinal tract. Most prominent is abdominal pain, colicky in character, accompanied by paleness, drawing up of the legs, screams and usually vomiting. Vickers found this typical onset in 87 per cent of cases. Instead of the ordinary bowel movement there is very frequently the passage of blood and mucus. This is almost pathognomonic.

In most cases an abdominal tumor can be felt. The tumor is sausage shaped, about 1 in. in diameter of variable length and hard. It becomes more definite during the spasm of pain and may almost disappear during the interval of freedom from pain. It may be detected anywhere in the colon, but is found most frequently in the left side of the abdomen. It is tender and its manipulation produces spasm. The blood which appears from the anus is usually bright red and usually intimately mixed with mucus which gives it a red currant jelly appearance.

Intussusception must be differentiated from acute enterocolitis. Both conditions are frequently preceded by digestive disturbances such as diarrhea, vomiting and the passage of blood and mucus from the rectum accompanied by tenesmus. The crucial point in the diagnosis is the demonstration of complete intestinal obstruction. Such obstruction is evidenced by mucus on the diaper and bile in the blood. In acute intussusception the onset is usually very sudden.

Intussusception must be differentiated also from Henoch's purpura. The latter usually occurs in older children and is never accompanied by true intestinal obstruction. Fecal matter always being found mixed with the blood and mucus passed by rectum. More over in purpura rectal examination discloses a characteristic edemata of the mucosa and if an iliac tumor is present it is fixed, usually situated in the left iliac fossa and due to infiltration of the colon by hemorrhage. During the course of purpura ecchymotic spots make their appearance around the joints of the extremities.

When an intussusception protrudes from the anus it may be mistaken for prolapse of the rectum. The differentiation is made by the examining finger which in true prolapse cannot be inserted between the protrusion and the walls of the rectum whereas in an intussusception it can be swept completely around the prolapse.

The prognosis of intussusception depends in large measure on the duration of the condition before

treatment is begun. The type of the intussusception is also a factor. Ileocolic intussusception is the type most difficult to reduce and the first to show gangrenous changes. Enteric intussusception comes next in these respects. Spontaneous cure does not occur in more than 1 or 2 per cent of cases.

The treatment is surgical. The air and water reduction methods are dangerous because of the early circulatory changes in the affected bowel which diminish the resistance of the bowel to pressure and favor perforation. However Hipsley recently recorded 200 consecutive cases treated by hydrostatic pressure with a mortality of 5 per cent and complete reduction in 62 per cent.

The operative procedures indicated vary according to the nature of the condition. Tension on the intussusception is usually ineffectual and not without danger. The safest and most satisfactory procedure is backward pressure on the apex of the intussusciens by successively enclosing more and more of the intussusciens in the hands in a retrograde direction. When reduction is difficult the previous maneuver may be augmented by pulling upon the entering loop. If this is not sufficient it is advisable to wrap the entire tumor in a warm wet pad and then apply pressure equally in all directions, squeeze the mass with the hands. This reduces the bulk by displacing some of the liquid from the wall into the lumen and facilitates reduction by the measures which previously were unsuccessful.

The apex of the intussusception should then be carefully examined for tumor. Because of the edema it is often difficult to determine the presence of a neoplasm. Under such circumstances there should be no hesitancy in incising the intestine in a longitudinal direction to ascertain the condition accurately. If a tumor is discovered it should be removed by local excision or enterectomy, unless the patient's condition will permit no further operative treatment. Malignancy is encountered more frequently in the large bowel than in the small bowel and more frequently in the adult than in the child. Pedunculated tumors are far less likely to be malignant than tumors without a pedicle. When a sessile tumor is definitely benign its complete destruction may be accomplished with the cautery without enterectomy.

In all resections in children the continuity of the intestinal canal will be most easily and safely restored by lateral anastomosis after end closure.

In the choice of anesthesia subarachnoid block should be considered first. It produces no shock, prevents operative trauma, facilitates reduction of the intussusception, causes no tissue irritation, combats ileus, does not abolish the cough reflex and is easy to induce and safe.

Postoperatively a 5 per cent solution of sodium chloride should be given intravenously. Fluids should be forced. A 20 per cent solution of glucose should be given intravenously if vomiting prevents its oral administration and insulin should be given subcutaneously. Hypodermoclysis is often a very

valuable aid. When reduction is impossible or gangrene has developed the condition of the patient determines the choice of treatment. The procedures to be considered under such circumstances are (1) resection with intestinal anastomosis (2) resection with enterostomy and (3) wrapping of the intussusception in omentum followed by enterostomy with resection and anastomosis after the urgent symptoms of obstruction have subsided.

NORMAN G. PARRY, M.D.

Kjaergaard II Duodenal Ulcer with Pylorospasm and an Increase in the Blood Urea *Acta med Scand* 933 1 x 489

After reviewing the literature on the increase in the blood urea secondary to pyloro spasm from duodenal ulcer the author reports a case in detail.

Occlusion of the pylorus is usually followed by a severe intoxication characterized by hypochloremia, azotemia and alkalosis. As yet we do not know the nature of the toxic substances in the process where they are formed or their mode of action or whether the uremia is due entirely to toxic destruction of body proteins or partly to the toxic nephritis. Dehydration secondary to pernicious vomiting is another factor present in permanent occlusion and temporary spasm of the pylorus. Dehydration has been shown to produce an increase in the blood urea concentration.

In the case reported by the author the patient had a pylorospasm and vomited large amounts of brownish blood stained gastric secretion. Anuria developed with a blood urea of 71 mgm per cent. The injection of atropin and the administration of salt solution by hypodermoclysis restored urinary function. The intoxication gradually subsided with a slow decrease in the blood urea concentration. The blood urea concentration did not become normal until seven days after the onset of the attack. Under dietary treatment for the ulcer the urine became negative and the stools and kidney function normal.

SAMUEL J. FOCLESON, M.D.

Fra 1 I The Diverticula of the Jejunum *Brit J Surg* 933 22 83

The author suggests the following classification of jejunal diverticula: (1) anomalous in general of the traction type secondary to some other abdominal condition (2) enterogenous congenital in origin arising primarily as isolated masses of cells which separate from the primitive gut and become vacuolated forming cysts which later become attached to the intestine to produce diverticula (3) Meckel's diverticulum arising from the unobliterated vitello intestinal canal to assume numerous clinical forms and (4) multiple false diverticula a rare acquired condition the frequency of which because of the absence of symptoms in most cases will never be known.

Multiple false diverticula may occur anywhere between the duodenojejunal angle and the ileum. They appear as thin walled sacs arising from the

mesenteric border of the gut and vary in size from that of a pea to that of an orange. As many as several hundred diverticula have been found in a single individual. The origin of the sac is a projection herniation or protrusion of the mucous membrane at the mesenteric border of the gut through the substance of the muscle. The sacs are usually empty or contain fluid chyme mixed with air. The relatively large stoma or neck of the sac provides adequate drainage for the fluid contents and this combined with the rapid intestinal peristalsis in the small intestine doubtless prevents in spissation of the contents and complications such as are associated with other types of diverticula. In the late stages of the condition the size and weight of the sac may cause kinking of its neck and thus give rise to symptoms due to inadequate emptying. Microscopically a section of the wall of the sac at the fundus shows intestinal mucous membrane covered by the peritoneum forming one of the leaves of the mesentery. Between the two there may be areolar or fibrous tissue. A fat deposit encasing the sac is common.

The condition occurs in both sexes and usually after the age of forty years. The upper jejunum is usually affected the larger diverticula occurring proximally. There is a definite relationship to the vasa recta. In several reported cases there was an intestinal stricture further down in the gut.

The author cites several anatomical facts to explain the predominance of these diverticula in the jejunum. The longitudinal muscle in the upper jejunum is thinned out, wasted or almost missing because the jejunum has a three times greater circumference to be covered than the ileum. This congenital divarication can be still further accentuated by separation of the mesenteric leaves by fat. The piercing of the circular tunic by the arteries and veins to the gut produces a potential site of lowered resistance. In addition the arteries to the jejunum are larger than those to the ileum. The additional factor needed is increased pressure such as is found in stricture of the gut, constipation, vesical straining and coughing. It therefore seems evident that the causative factor is increased intestinal tension acting along the channel of the artery or at the point where the longitudinal muscle is divaricated.

Following a report of his own case the author discusses the symptoms, diagnosis and treatment of the condition. A prominent symptom is epigastric pain or a feeling of fullness from three to four hours after meals. This discomfort is little affected by food fluids or alkalies but is somewhat relieved by the recumbent position. Flatulence, borborygmi, gurgling and rumbling are the most constant features. Melena is present in some cases. However there is no constancy in the clinical picture. For this reason and because most cases are asymptomatic the condition is discovered accidentally during operation for an unrelated condition or at post mortem examination.

The treatment varies. For asymptomatic cases in which the condition is discovered clinically during routine examination the author believes that conservative medical treatment is indicated because most of the patients are elderly and not good operative risks and the majority pass through life without complications. In reported cases in which complications occurred they rarely proved fatal. Frazer outlines the non-operative treatment in detail stressing the importance of careful follow up examinations at six month intervals. In the asymptomatic case in which the condition is discovered accidentally at operation for another condition the treatment must depend upon the judgment of the surgeon. When the patient is a relatively good operative risk the author believes resection of the affected gut should be performed. He is of the opinion that operation is indicated in all cases in which the diverticula are causing symptoms and that in such cases the procedure of choice is complete removal of the affected area with restoration of the continuity of the gut. He discusses the technical difficulties encountered in some detail. He states that only one case in four presents symptoms warranting operation.

In discussing the value of the roentgenogram he says that a correct X-ray diagnosis is rare. He gives the reasons for this fact and describes a technique to fill the diverticula and render them visible.

He concludes by describing his experimental work in which he distended gut freshly obtained at autopsy with thin bismuth solution or oxygen. He was able to show that equal distention in the jejunum, ileum and colon produced diverticula in the jejunum only. The artificial diverticula resemble those found clinically in almost every respect. They are produced most easily in the upper jejunum and they always occur along the mesenteric border and between the leaves of the mesentery. The sacs consist of mucous membrane only and are all related to an artery. Repeated experiments have always given the same results.

T. BANYARD JONES, M.D.

Harkins, H. N. Intussusception Due to an Invaginated Meckel's Diverticulum. *I. S. S.* 1933, 20, 111, 10.

Harkins states that Meckel's diverticulum and intussusception are relatively common but the combination is infrequent. He reports 2 cases of the combined condition which were operated upon at the University of Chicago Clinics during the past year and reviews 160 cases which he collected from the literature.

The first case reported by Harkins was that of a male infant seven months old which entered the hospital with a history of bloody stools, vomiting, abdominal pain and signs of intestinal obstruction of three days duration. The illness began suddenly with vomiting and bloody bowel movements. After an enema these symptoms disappeared and the child then seemed almost well until twelve

hours before his admission to the hospital when all of the symptoms recurred with great pain. The abdomen was greatly distended but no tumor was palpable and there was no rigidity. A barium enema revealed arrest of the barium at the splenic flexure and the bulbous expansion with the cup-like depression in the center suggestive of intussusception. Operation was performed by Andrews two hours after the patient's admission to the hospital. An intussusception of 4 in. of the ileum was found prolapsed through the ileocecal valve. This was reduced by expulsion. At the apex of the intussusception there was a Meckel's diverticulum 1 cm. long. The abdomen was closed without drainage. The child is now well eleven months after the operation.

The second case was that of a male child of five years who entered the hospital with vomiting, colicky pains about the umbilicus and constipation of thirty-two hours duration. The illness began suddenly with severe pain all over the abdomen. Blood was returned from an enema and vomiting occurred. The white blood-cell count was 16,500. No mass could be found on abdominal or rectal examination. Operation performed thirty-two hours after the onset of the condition through a right rectus incision revealed considerable distention of the cecum and an ileocecal intussusception about 2.5 cm. long which was easily reduced. At the apex of the intussusception there was an inverted Meckel's diverticulum 4 cm. long. The diverticulum was gangrenous. It was excised by an incision parallel with the lumen of the bowel. The abdomen was closed without drainage. For three days after the operation the patient vomited frequently. He was given glucose and Ringer's solution subcutaneously and rectally. Feces and gas passed spontaneously on the third day. Recovery was then uneventful and the child was well three months after the operation.

Of the 160 cases of intussusception due to an invaginated Meckel's diverticulum which were collected from the literature a statistical analysis was made of 114. As compared with the ordinary type of intussusception this type occurs in older persons, is preceded by previous attacks more frequently, runs a more chronic course which is often characterized by a mild attack one or two days prior to the onset of the major illness, causes more severe vomiting, is associated with a palpable mass situated more often on the right side than on the left side and much less frequently with a mass palpable through the rectum and is accompanied by less profuse bleeding from the rectum.

JONES, H. BANYARD, M.D.

Paulson, M. The Present Status of Idiopathic Ulcerative Colitis with Special Reference to Etiology. *J. Am. Med. A.* 1933, 61, 16, 7.

Chronic idiopathic ulcerative colitis is a syndrome presenting fairly constant symptoms and signs and having possibly a variable but no demonstrable specific cause. It involves the large intestine par-

ticularly its distal segments and resembles chronic bacillary dysentery clinically, pathologically, and generally, and in some respects serologically and bacteriologically.

The theory that avitaminosis may be a cause of ulcerative colitis is not supported by clinical experience although the experimental evidence in favor of it is striking. Vagotonia and disturbances of calcium metabolism has been thought to play a rôle in the development of the condition. There is neither satisfactory direct evidence nor properly controlled confirmatory evidence of a specific or primary etiological association between any bacterium and chronic ulcerative colitis. The definite connection between foci of infection and the condition remains to be proved both experimentally and clinically. However, experimental data indicate the non-specificity of bacterial influence. Recent work suggests that the greater and more prolonged the bleeding regardless of the cause the greater will be the diminution of the flora and the more marked the relative increase in cocci. The cocci and to a lesser extent the other surviving intestinal organisms normally present are probably responsible for a secondary infection.

Recurrences are certain to occur in all but exceptional cases. The possibility of permanent cure is remote.

As the specific etiological factor remains to be determined there is no specific therapy and the therapeutic response to not specific ileostomy is regarded as the operation of choice and should be done earlier than is the usual practice. S. L. F. KANE, M.D.

Hosoi K. Neurogenic Appendicitis. *Im J S G* 1933 xvii 428

Hosoi reports a careful pathological study of appendices which justified surgical intervention but appeared grossly normal on removal. Neurogenic appendicitis is a pathological entity of the appendix characterized by the presence of one or more interstitial neuromata and often causing clinical signs characteristic of suppurative appendicitis. Neuroma of the appendix is the most frequent cause of non-suppurative appendicitis. It was found in 195 (50.7 per cent) of 344 consecutive appendectomies in which the appendix showed no evidence of an acute inflammatory process.

Other conditions classified with non-suppurative appendicitis are (1) endometriosis of the appendix (2) carcinoids and (3) infestation with the oxyuris.

As a rule neuromata of the appendix cannot be identified in gross section. Microscopic examination showed them to be small circular masses of non-medullated nerve fibers and spindle-shaped cells located within the muscularis mucosae. They are usually located in and if more than one is present they are connected with each other by strands of nerve tissue. Implicated innervation is often present. Masson believes that these tumors arise from the argentaffin cells. He has demonstrated them best by a chrome stain.

Of the neuromata in the cases reviewed 60.2 per cent were found in the cecum and 30.8 per cent in the appendix. Pain varying from severe agonizing cramps to a dull ache occurred in 48.2 per cent of the cases. In 30 per cent it was localized at McBurney's point. Nausea was present in 25 per cent of the cases but vomiting occurred in only 2.5 per cent. The temperature pulse and respiration were generally within the normal limits. Constipation was a characteristic symptom in 18.5 per cent of the cases. In the others there was a history of diarrhea during the attack followed by constipation. The white and differential blood counts were generally normal. In cases with a normal blood count and a normal temperature accompanied by gastrointestinal complaints and signs referable to the appendix the possibility of a non-suppurative lesion of the appendix such as neurogenic appendicitis should be considered.

BE JAMES C. T. SHAPIROFF, M.D.

Menegaux G. Serious Accidents in Rectoscopy. (*Les lésions graves de la rectoscopie*) *P mid P* 1933 I 95

The author reports the case of a man forty-three years of age who was subjected to rectoscopy because of alternating diarrhea and constipation with loss of weight. Twenty hours after the examination a diagnosis of general peritonitis was made and the abdomen opened. Exploration revealed a large mass at the rectosigmoid junction without evidence of perforation. Because of its size no attempt was made to resect the mass. At autopsy a diagnosis of general peritonitis following the rupture of a perisigmoidal abscess was made.

In a review of the literature the author was unable to find a comparable case. His attention has frequently been called to the danger of perforation of the bowel and the rupture of an abscess when rectoscopy is done in the presence of perisigmoid inflammation or inflammation of a rectal diverticulum.

There are records of ten cases in which the normal rectum was perforated by the rectoscope. The site of the perforation was always at the rectosigmoid junction.

To prevent accidents certain contra-indications must be recognized. These are (1) diverticula (2) perirectal and perisigmoid inflammation and (3) rectosigmoid cancer.

In the passing of the rectoscopic force must be avoided and a proper technique used. The knee-chest position is the position of choice.

Insertion of the rectum is rarely evidenced by rectal hemorrhage. It is usually manifested by sudden very severe pain immediately or a short time after the examination. Occasionally marked shock is the first symptom. Following the diagnosis a small incision should be made in the abdomen under spinal or general anesthesia so that a thorough exploration may be carried out. The perforation should be closed and covered with peritoneum and the abdomen closed with drainage.



Pentomitis must be treated by drainage in the usual manner. Even when treatment is given immediately the condition is very grave.

MARSH W POOLE M D

Rankin F W and Priestley J T Prolapse of the Rectum *A S S* 933 c m 1930

In an attempt to correlate and classify the basic pathological physiology and various methods of treating prolapse of the rectum the authors reviewed the cases of prolapse of the rectum observed at the Mayo Clinic in recent years. The cases were classified as prolapse of the rectal mucous membrane, prolapse of the rectum proper (proctodia) which may be graded 1 to 4 depending on the extent of the protrusion and intussusception of the rectosigmoid.

Prolapse of the mucous membrane is more common during the early years of life than at any other time and particularly following debilitating diseases. Prolapse of the mucous membrane of the rectum occurring in adults is usually associated with a pre-existing pathological condition of the rectum which causes excessive straining at stool. The nature of the condition is usually obvious on inspection of the involved area. Non-operative measures will usually cure this condition if known etiological factors are eliminated. Local injections of alcohol are often successful when medical measures fail.

True prolapse of the rectum is characterized by the presence of all layers of the rectal wall in the protrusion. There are two distinct types. One type starts below the reflection of the peritoneum and is characterized by absence of a marginal sulcus. The other type begins above the reflection of the pelvic peritoneum and has a definite sulcus laterally. The cardinal features are a mass protruding from the anus associated with obstipation and subsequently in advanced cases with incontinence. Non-operative procedures may be palliative but are not curative. The following types of operative procedures have been suggested:

- 1 Operations for narrowing the anal aperture and adjacent rectum
- 2 Procedures attempting to strengthen the rectal supports from below
- 3 Fixation operations such as rectopexy
- 4 Operations directed toward cure by resection of the prolapse

5 The operation suggested by Moschowitz in which the cul de sac of Douglas is obliterated. This operation has yielded very satisfactory results. In the last five years at the Mayo Clinic it has been employed in nine cases of major rectal prolapse.

Intussusception of the rectosigmoid is not a true prolapse but is treated best by obliteration of the true pelvis by the Moschowitz technique.

Scarborough R A Pruritus Ani Its Etiology and Treatment *A S S* 933 xcvi 1 39

Pruritus ani is the symptom of localized itching about the anus. However it is not a clinical entity

due always to the same fundamental cause. According to the earliest theory of its causation it has a hysterical or neurogenic basis. Some believe it is a referred sensation due to disease in an adjacent organ such as the prostate, seminal vesicles, bladder or urethra. In the author's opinion this theory of reflex origin is difficult to accept. Direct visual inspection of the entire length of the anal canal, the mucutaneous line and at least the lower 2 in. of the rectum with the anoscope is imperative. Experience has shown that there is always a local cause for the itching. The essential factor is the presence in the anal canal of an irritating secretion or discharge. Among the factors responsible may be included a relaxed sphincter and muscle prolapse, internal hemorrhoids, external hemorrhoids, an infectious discharge, erosion of pockets of dilated mucosa by a foreign body and small fissures or sinus tracts.

The methods of treatment are as numerous as the theories regarding the origin of the condition. Convinced of the constant presence of a local cause the author is convinced also that treatment for permanent relief must be directed toward cure of the local cause. Treatment of the secondary changes without removal of the primary cause results only in temporary improvement. One such type of treatment is irradiation. Extensive burns following irradiation constitute convincing evidence that irradiation may do great harm. Ultraviolet light, vaccine and colonic flushings appear to relieve but do not cure the itching. Complete relief for periods of from three to twelve months may be obtained by blocking the sensory nerve endings of the anal and perianal skin but unless the causative lesion is removed the itching ultimately recurs. Simpler and more effective methods of blocking the sensory nerves such as the injection of alcohol or some sclerosing or anesthetic solution may also give immediate but not permanent relief. Salves and ointments are at best only palliative.

In the author's method of treatment a careful examination of the entire length of the anal canal is made with the lighted anoscope to discover the cause of the abnormal irritative discharge. Treatment is then instituted for correction of the local lesion. As a rule surgical measures are necessary.

Of 304 patients seen at the proctological clinic, 60 per cent suffered from localized anal itching. A definite local cause was found to account for the pruritus in all but 1 case. Treatment was undertaken in 63 cases. In 4 cases palliative treatment by the local injection of hemorrhoids was given. In 52 cases in which treatment was completed absolute cure of the pruritus without recurrence was obtained.

JOHN W. NUTCH M.D.

Beauséud R, Cain A, Oury P and Poirier A. Cancer of the Anus (*Le cancer de l'anus*). *P. Méd. Par.* 933 N 92 1837

This article is based on a study of 143 cases of cancer of the anus. The lesions included cancers of the mucocutaneous margin and cancers of the anal

canal. Most of them were pavement celled epitheliomata but some were glandular cylindrical celled epitheliomata. While the 2 types often cause the same symptoms, the cylindrical celled epithelioma yields only to radical excision whereas the pavement celled epithelioma is radiosensitive and may even be cured by radium or X ray irradiation.

Cancer of the anus is sometimes secondary to cancer of the rectum but is usually primary in the anus. It has not been found in persons under thirty years of age. It is most common in the fifth decade of life. The ratio of anal to rectosigmoid cancer is 1:5.7. Cancer never develops in normal tissue but may occur at the site of chronic irritation, an old tumor, a marginal polyp or a fistula. Hemorrhoid does not seem to be a cause.

In 58 of the cases reviewed the first symptoms developed from two months to a year before the first examination. Early complaints were functional disturbance, anal pain, more or less profuse hemorrhage from the anus, a false desire to defecate, constipation and symptoms attributed to hemorrhoids. In 2 cases the first sign was inguinal adenopathy.

The anal pain which is perhaps the dominating symptom has been called *sphincteralgia*. It is not constant. It occurs mainly during efforts at defecation but may be prolonged after defecation. It may be piercing or burning or accompanied by itching and a feeling of weight or the presence of a foreign body in the rectum and may radiate toward the perineum.

In a small proportion of cases the condition is painless and the patient seeks examination on account of a tumor mass or ulceration at the anal margin. Cancer of the orifice and margin of the anus may be found in any part of the circumference of the anus even in the commissures. It is of 2 main types: one with a protruding cauliflower appearance and the other showing ulceration with loss of substance, a red base and undermined edges. Various atypical forms of flat erosion and fissures are found. The growth is not always limited to the external or anal margin; it may extend into the anal canal as far as an inch and simulate a venereal wart or condyloma. Occasionally it presents a pseudohemorrhoidal or pseudophlegmonous appearance.

All tumors of this type have 2 principal characteristics: one a noddy hardness and the other a cancerous extension or permeating infiltration which can be felt externally or on rectal or vaginal examination.

In the early stage cancer of the anal canal requires careful endoscopic examination with a speculum. Three main types are found: vegetative, ulcerous and infiltrating. The infiltrating type which is difficult to diagnose occurs in the upper extremity of the canal and is surrounded by edema with thickening of the wall which may completely encircle the canal without appearing externally. This ampullary cancer extends to the presacral lymph nodes where recurrences may develop after its excision and has a grave prognosis. In ordinary

anal cancer the lymphatic extension is toward the inguinal lymph nodes. In some cases the cancer spreads to the ampulla of the rectum, invades the ischio-rectal fossa and spreads into the bladder causing urinary symptoms. In others it spreads on the surface into the skin and the anal orifice loses all normal structure and becomes a neoplastic mass extending along the perineum.

Biopsy should be done in every case and the treatment based on the findings of this examination. In pavement celled epithelioma radium therapy should give excellent results. Of 20 patients treated at the Radium Institute in the period from 1921 to 1932 inclusive 16 were women. Light remained free from recurrence: 1 after ten years, 3 after five years, 2 after two years, 1 after one and a half years and 1 after a year. In 8 recurrences developed mainly in the primary site or in the glands in the iliac fossa and the prececal nodes. In 4 the condition was not cured locally.

The results of excision of cylindrical celled glandular epithelioma were far less satisfactory.

HELLOE SPED M D

#### LIVER GALL BLADDER PANCREAS AND SPLEEN

Zappala G. The Antonucci Method of Cholecystography (La col cistografia secondo il metodo Antonucci). *Policlinico* Rome 1933 xl 22 chi 54.

The author reviews 300 cases of cholecystography by the Antonucci so called rapid method.

Both the intravenous and oral routes of administration were employed. The procedure consists essentially in the use of tetra iodophenolphthalein combined with glucose and insulin which for some unknown reason accelerates the hepatic elimination of the dye into the gall bladder. The activating phenomenon has been the subject of considerable controversy in literature. Some ascribe the mechanism to the hyperglycemia and others to direct stimulation of the hepatic cells.

Of the 300 cases studied 100 had subsequent operative control. The incidence of error in these 100 cases and in the cases of 26 normal individuals subjected to the intravenous method was 0 per cent whereas in cases in which the oral method was used it was 15 per cent.

The author concludes that the Antonucci rapid method of cholecystography is reliable, practical and simple and causes no greater systemic disturbances than any other method. The dye is demonstrable in the gall bladder half an hour after the injection and sufficiently concentrated for cholecystography after two or three hours.

GEORGE C. FISOLA M D

Gilbert R and Demole M J. Fifty Rapid Cholecystographies. Results and Indications (50 cholecystographies rapides. Résultats et indications). *Presse médicale* Paris 1933 no 9 183.

One inconvenience of the usual method of cholecystography is the long time required after the injection

tion of tetra iodide before the gall bladder becomes visible. Visibility generally requires twelve hours. Antonucci has devised a method by which the gall bladder is rendered visible in from half an hour to an hour and reaches its maximum visibility in two hours.

The patient is usually prepared by three or four days of a diet poor in carbohydrates but this step may be omitted. On the day of the test he is given an intravenous injection of 125 ccm of a 40 per cent glucose solution followed by an injection of tetra iodide. Ten minutes later he is given 20 units of insulin subcutaneously. To prevent accidents both the glucose and the tetra iodide are injected slowly each injection taking from fifteen to twenty minutes.

The glucose provokes a transitory hyperglycemia which hastens the passage of the tetra iodide through the liver. The diet poor in carbohydrates decreases the liver glycogen and in this way reinforces the action of the glucose. However it is not strictly necessary. The insulin furthers the excretion of the iodized bile from the liver into the bile ducts.

The authors have used this method in fifty cases. The results were negative in 47 per cent. This is a higher percentage of negative results than with the Graham method. However the rapid method gives positive results in some cases in which the Graham method gives negative results for example cases of Basedow's disease and diabetes. This is because the hyperglycemia hastens the passage of bile into the gall bladder and the gall bladder is empty when the first roentgenogram is taken by the slow method.

However while a positive rapid cholecystogram is conclusive a negative rapid cholecystogram is not. When the negative results in the cases reviewed were controlled by Sandstrom's fractional oral method it was found that many of them were positive. With the Antonucci method some cases that are negative at the end of two hours become positive at the end of five or six hours. Therefore if it seems probable that cholecystography will be negative Sandstrom's method is the method of choice but if a normal gall bladder picture is expected the rapid method is preferable. *ACDRE Goss Morca MD*

**Milani E. Cholecystographic Data in Strawberry Gall Bladder With Surgical Control** (I data colecografici della cistite frastraginata) *Archiv del cont. all. op. att.* Rad. I med. 933 x 1934

The author examined 400 cholecystograms 9 of which were controlled operatively. The conditions in the 9 cases coming to operation were as follows: strawberry gall bladder 18 cases, cholelithiasis 36 cases, chronic cholecystitis 15 cases, empyema of the gall bladder 1 case, periductal ulcer with pericholecystitis 5 cases, perforated duodenal ulcer with cholecystitis 3 cases, and cholecystitis with appendicitis 1 case. Cholecystography was done according to the Graham method in the majority of the cases but other tests and methods were also used.

Milani reviews the gross and microscopic pathological changes in strawberry gall bladder and the various theories regarding the cause of the condition. He then describes the clinical picture briefly.

The findings of X-ray examination are considered in detail. Evidence of the condition may be obtained indirectly from a study of the gastro-intestinal tract. The gall bladder may make an impression on the duodenum or pylorus. Such an impression was noted in 3 of the cases reviewed. It does not occur in cases of atonic gall bladder. Local spasm of the antrum was noted frequently. Deformity and displacement of the bulb were observed in 1 case. Especially in the presence of adhesions there may be also a segmental dilatation of the small intestine, spasm of the sphincter of the right colon and delay of emptying of the stomach with retention and delay of emptying of the bulb.

In strawberry gall bladder direct visibility of the gall bladder with tenderness over the organ is not common and was never noticed by Milani. Because of their normal variations the form, size and location of the gall bladder are of little significance. Delay in the appearance of the shadow is not uncommon. The shadow is usually discrete and rarely absent but as a rule is pale. Occasionally it has an arcular appearance. The intensity of the shadow depends on the time the roentgenogram is made, the function of the liver and normal permeability of the bile passages. Of importance is the fact that the presence of an intense shadow when the Graham method is used is not always an indication of a normal gall bladder wall.

In a number of cases both the slow Graham method of cholecystography and the rapid method of Antonucci were used. The latter method depends upon the intravenous injection of the iodine-containing dye in a glucose solution (50 gm. of glucose, 125 ccm of a 40 per cent glucose solution). The maximum visibility of the gall bladder is reached about two hours after the injection. The glucose presumably causes a marked increase in liver function. Besides being an important test of dye-concentrating power this is a test of the speed of concentration of the load which the gall bladder is able to carry. Strawberry gall bladder is not shown as rapidly by this method as by the Graham method, probably because the diseased gall bladder wall is unable to handle the rapidly flowing bile and to concentrate it. *A. LOUIS ROSE MD*

**Twiss J R. and Greene C. H. D. Tarsia's Method of Managing the Discharges of the Gall Bladder** *Newer Point of View J Am M A* 933 c 83

Among the factors predisposing to the development of cholecystitis and cholelithiasis are biliary stasis, infection, disturbances of pigment excretion, cholesterol metabolism, obesity and pregnancy.

It is well known that disturbances of cholesterol metabolism frequently result in the formation of gall stones and a large amount of work has been

done on this phase of cholesterol metabolism. While no final agreement has been reached it appears reasonably certain that the liver has a regulating function and is active in maintaining the cholesterol content of the blood at a fairly constant level. There is considerable evidence also that with the prolonged ingestion of foods rich in cholesterol hypercholesterolemia develops and is accompanied by an increased excretion of cholesterol in the bile. This is produced also by diets rich in fat. Diets low in cholesterol tend to reduce the cholesterol content of the blood. Rapid reduction of weight in obesity appears to produce a hypercholesterolemia by liberating considerable quantities of stored cholesterol. Therefore the weight reduction of an obese patient should be undertaken gradually.

In discussing the dietary treatment of gall bladder disease the authors give five bland sample diets three of which are low and two of which are high in cholesterol.

Besides dietary treatment general hygienic measures are indicated to prevent biliary stasis and prevent or relieve inflammation of the gall bladder or bile ducts and operation is indicated to remove calculi.

The prevention of biliary stasis is accomplished by active exercise and the avoidance of constipation. Inflammation is best prevented or relieved by the removal of foci of infection and the use of saline cathartics and alkaline powders.

G DANIEL DELBEAT, M.D.

Popper, H. L. Pancreatic Secretion in the Bile. *Pathogenesis and Its Significance in the Development of Acute Pancreatic Diseases* (Pa. Kreussaft in den Gallenwegen. Seine pathogenetische Bedeutung für die Entstehung der Pankreaskrankheiten). *Chirurgia* 1933, 41: 660.

This article is based on examinations of bile for the presence of pancreatic ferments. Because of the intricacy of the method lipase determinations were undertaken in only a few instances. The stalagmometric method of Rona and Michaelis was employed. Trypsin determinations by the method of Fuld and Gross can be made only on non-inflammatory bile containing little protease. Of chief importance is the diastase determination. Unlike trypsin the diastatic ferment remains unchanged for a long time. The diastase determinations were made by the Wohlgemuth half hour method. Minor sources of error: the natural color of the bile, the iodine binding power of the bile and slight inhibition of starch digestion in bile must be given consideration.

Examination of the bile for the presence of pancreatic ferments was made in 219 cases. In 21 of these the bile was obtained from the gall bladder and in 2 from the common duct and the gall bladder. In 16 cases cholelithiasis with or without evidence of inflammation was present. Five specimens were from patients with tumor of the gall bladder or pancreas, 16 from patients with acute pancreatic disease and 1 from a patient with non perforative

biliary peritonitis. Thirty-six were obtained by puncture in the course of an operation for a condition not involving the biliary tract or pancreas. Only diastase values which exceeded the upper normal serum content by 64 units were considered. The pathological biliary diastase values varied between 64 and 64,000 units but in the majority of the cases were between 256 and 4,096 units.

Seventeen per cent of the 219 specimens examined showed increased diastase values. As cases of acute pancreatitis should be subtracted the diastase values in the bile were pathological in 10 per cent of the cases (143 cases of cholelithiasis, 5 cases of gall bladder or pancreatic tumor and 32 cases of normal gall bladder). The increased values were found in cases of inflammatory gall bladder disease, cases of practically non-reacting cholelithiasis and in 3 cases in which the bile passages were normal. The results of histological examination of the gall bladder and bacteriological study of the bile in cases with increased diastase values allowed of no conclusions when they were compared with those in cases in which the ferment was not present and there was no difference in the anamnesis and clinical and operative findings in these cases. A choledochus stone was found only once in the cases with increased diastase values. The stone in this case was not at the papilla but beneath the level at which the cystic duct branches off.

The increase of diastase was independent of any bacterial or cellular admixture. As increased diastase values occur in the blood without an increase in the bile and as the diastase value in the bile may be increased without a noteworthy increase in the diastase in the blood, the author concludes that the increases are caused by the admixture of pancreatic juice with the bile and not by excretion through the liver. Following operation in a case of acute pancreatitis increased diastase values were found in the urine and blood but no increase was determined in the bile from the hepatic duct. As in 2 cases of choledochus drainage only a transient increase was found in the diastase value in the bile from the liver the author concluded that pancreatic secretion had entered the bile through the duct of Wirsung. For this to occur a common orifice for the choledochus and the duct of Wirsung is essential. This condition was proved at autopsy by the author in several cases.

The author does not believe that primary injury to the bile passages is caused by the penetrating pancreatic secretions. In support of his contention he cites the fact that increased diastase values were found in the cases of persons with a normal biliary tract. He also points out that the course of inflammatory diseases of the bile passages is no more severe when the diastase values are increased than when they are not increased.

In order to exclude the possibility of secondary injury of the liver from the admixture of pancreatic secretions in the bile, Popper later carried out the Baner galactose test for liver function in every case.

with increased diastase values. No noteworthy injuries of the hepatic parenchyma could be demonstrated by this method. Neither icterus nor a considerable urobilinogenuria was observed in any case. The author therefore rejects the theory of a relationship between acute and chronic injury of the bile passages and liver and the admixture of pancreatic juice with the bile. However, he recognizes a relationship between the afflux of pancreatic secretions to the bile and both non perforative biliary peritonitis and acute pancreatitis. He states that non perforative biliary peritonitis occurs only when there is a marked stasis of the ferment containing bile. This occurs usually in cases of stone at the papilla. According to Blad bile which contains pancreatic ferments is more diffusible but does not produce non perforative biliary peritonitis in the absence of stasis. Primary injury to the wall of the gall bladder is probably unnecessary for the development of non perforative biliary peritonitis.

Of the author's 18 cases of acute pancreatitis increased diastase values in the bile were found in 16. From this fact Popper concludes that in addition to stasis a communication between the bile and pancreatic passages is responsible for the development of most cases of acute pancreatitis. The absence of pancreatitis in his cases with bile containing pancreatic ferment he attributes to the absence of stasis. Acute pancreatitis and non perforative biliary peritonitis despite their common pathogenic essentials hinder each other's development apparently non perforative biliary peritonitis occurs only in the absence of pancreatitis and the pancreas is especially resistant. Access of bile to the pancreas does not appear to be essential for the development of acute pancreatitis. Pancreatitis probably results from trypsin activation in the bile passages and extension of the process of ferment activation by way of the lower intrahepatic portion of the choledochus to the pancreas possibly by diffusion.

HELLNER (Z)

Eurén R. Acute Diseases of the Pancreas in Relation to Operations on the Stomach and Duodenum (Ueber akute Pankreaserkrankungen im Zusammenhang mit Operationen des Magens und Duodenums). *Acta Chir Scand* 933 xxxi 3.

The author discusses the cases of acute pancreatic conditions following operations performed on the stomach and duodenum at the Upsala Clinic in the period from 1902 to 1932 and gives a brief review of the literature on the etiological and pathogenic factors of such complications. In discussing the operative traumata which may be followed by acute pancreatic disease he cites chiefly the work of Clairmont Walzel and Ustland.

Of 616 operations on the stomach and duodenum 9 were followed by a more or less serious acute postoperative condition of the pancreas. Eight of the latter were resections and 1 was a gastro-enterostomy. A few doubtful cases are also reported. In dis-

cussing the etiological relationship between operative traumata and the pancreatic changes found in the cases reviewed the author emphasizes that the nature of the relationship has not been definitely determined.

On the basis of the literature and the cases reviewed Eurén draws the following conclusions:

1. Deep penetration of an ulcer into the pancreas necessitates great care in the choice of operation. In cases of ulcer penetrating from the stomach the danger is considerably less, therefore resection should be performed when possible. In cases of duodenal and pyloric ulcer deep penetration may constitute an absolute contra-indication to resection. In any case liberation of the duodenum too far down must be avoided, gastro-enterostomy or perhaps resection for exclusion is best.

2. Sharp excision of the base of the ulcer from the pancreas is contra-indicated. Because of the danger of an unintentional deep effect fulguration of the ulcer base remaining in the pancreas is contra-indicated and unless left entirely alone the base should be merely carefully washed out. In every case it should be drained.

3. The treatment of the pancreas in cases of malignant growth encroaching upon surrounding tissues remains a problem the solution of which depends chiefly upon the judgment of the surgeon.

4. Such injuries as cutting or suturing into the glandular parenchyma, incarceration of the capsule in the suturing of the duodenal stump and strong traction upon or compression of the parenchyma must be avoided so far as possible.

5. Even in cases of apparently slight lesions of the glandular tissue the surgeon should always attempt to obtain good drainage and should refrain from primary suture.

## MISCELLANEOUS

Davis G G. Abdominal Emergencies Dealing Especially with Abdominal Injuries. *Ireland J Med & Surg* 933 xli 525.

Abdominal emergencies resulting from external violence the so-called internal injuries are relatively frequent and may be caused by localized or diffused violence. The lesion depends upon the extent, type and site of the impact.

If six hours after an abdominal injury there is abdominal pain accompanied by vomiting or a rising pulse or increasing rigidity of the abdominal wall exploration is indicated. Localized rigidity of the abdominal wall over the site of a lesion is of great importance. Operation should be deferred until the primary shock has subsided.

In systematic examinations attention should be directed first to the history. This is important because the mechanism of the injury is frequently pathognomonic. Circumscribed trauma for instance may cause subcutaneous rupture of the small intestine whereas all injuries of the liver, spleen, pancreas and blood vessels are the result of a trauma.

matizing crushing type of force applied over a broad surface

Some of the symptoms and signs of internal injuries are common to both lesions of parenchymatous organs and lesions of hollow viscera namely those of shock and those of hemorrhage

Injuries to the dorsal spinal cord and spinal column also are accompanied by abdominal rigidity In injuries of the liver there may be single or multiple lesions As a rule the capsule of the liver is lacerated The possibilities of operative treatment of liver wounds are rather limited If a clot is found in a laceration of the liver it should be left undisturbed Active bleeding is best controlled by sutures and tamponade to care for the bile drainage At the time of operation ruptures of the liver are usually not bleeding

The incidence of involvement of the spleen in abdominal injuries is about half that of involvement of the liver The diagnosis of splenic rupture is based on the signs of severe internal bleeding following trauma in the region of the spleen Because of the anatomy of the spleen the tears are frequently transverse and multiple Splenectomy is the safest treatment

In the gastrointestinal tract the small intestine is injured most frequently the large intestine next most frequently and the stomach least frequently Rupture of the stomach occurs usually when the stomach is full It is accompanied by severe shock and symptoms of hemorrhage which persist after treatment of the shock The pain is located in the epigastrium There is marked rigidity of the upper abdomen

In the diagnosis of gastrointestinal perforation X-ray examination is of great aid Almost without exception every case of an acute abdominal condition with a free gas bubble is a case of perforative peritonitis from the rupture of a gas-containing viscus This sign is detected quickly with the fluoroscope

In cases of internal injury due to a non-penetrating lesion operation should be preceded by treatment for the shock There are two signs of particular importance to influence the surgeon's decision for immediate interference One is permanent and progressively increasing weakness and frequently of the pulse usually associated with a subnormal temperature marked pallor and nervous anxiety due to a more or less restlessness and irritability the ordinary consequences of acute anemia The other is progressive distention of the abdomen combined with tenderness and rigidity of the abdominal wall which has been ascribed to itself on the slightest touch

The diagnosis of rupture of the urinary bladder is based on a history of violent injury the presence of blood in the urine and a persistent empty rectum and bladder A simple method of making a positive diagnosis is the insertion of the bladder catheter in the injection of air followed by X-ray examination This method will show whether the rupture is intraperitoneal or extraperitoneal or both

In intraperitoneal rupture the air escapes to the highest point of the abdominal cavity or shifts to the position of the patient is changed In extraperitoneal rupture the air follows the perivesical areolar tissue and fascial planes outside the peritoneal cavity In the absence of rupture of the bladder the air remains within the regular outline of the bladder

In rupture of the urethra there is inability to void a catheter cannot be passed a small amount of fresh blood follows removal of the catheter and the bladder is distended

The author condemns treatment of the wound through a perineal incision as this method causes scar tissue formation with stricture and resulting pathological changes in the bladder ureters and kidneys He uses a male and female sound and a catheter The male sound is inserted through the penis and the female sound with a cupped tip is inserted into the urethra through the bladder following suprapubic cystostomy When the two sounds meet and click the male sound is engaged into the cupped end of the female sound The male sound is then guided into the bladder A silk or catgut suture is passed through the drilled hole of the male sound in the bladder and a rubber catheter connected to the suture The sutures are tied and the catheter is introduced from the bladder through the penis and left in place The cystostomy is continued for a number of days for drainage

CHARLES F. DILLIS M.D.

Lewis D. and Trimble J. R. Subcutaneous Injuries of the Abdomen. J. A. G. 913 xc 1 035

The authors discuss injuries of the liver spleen intestines kidneys and bladder

The mortality of subcutaneous abdominal injuries is quite variable During the period from 1885 to 1896 it ranged between 60 and 70 per cent By 1900 it had been reduced to 30 per cent In a report on 136 cases seen in a period of twenty three and a half years which was published in 1925 it was given as 21.9 per cent

Force applied to a circumscribed area is more apt to injure the intestines or a kidney while force applied more diffusely over a wide area is more apt to injure the liver spleen pancreas or blood vessels Some of the viscera are protected by their position and engorgement during physiological action may predispose to injury The viscera of the young being more plastic are not so frequently injured as the viscera of the old which because of fixity cannot change the form or location when force is applied One of the chief reasons for the reduction in the mortality of subcutaneous abdominal injuries is the increased frequency with which exploratory laparotomies are performed

In the cases of subcutaneous injury of the liver which are reviewed by the author the treatment consisted of packing with gauze combined with autogenous or catgut suture To aid the escape of bile from the site of the laceration putta percha was

employed. A favorable prognosis in complicated cases depends upon early diagnosis and early control of the hemorrhage.

Ruptures of the spleen were treated preferably by splenectomy. The prognosis of such injuries depends upon the severity of the associated injuries and the time of operation. As in other severe intra-abdominal injuries, operation should be performed early but not until the patient has recovered from shock.

Injuries of the intestines are common. The small intestine is more frequently injured than the large intestine and the large intestine more frequently than the stomach. The force is usually circumscribed. As a rule the patient gives a history of being kicked, struck by a stone or run over by an automobile. Occasionally a bursting rupture is found. The intestinal loop may be ruptured from within by its contents of liquid and air. A bursting rupture of this kind is usually long extending over a considerable segment. As a rule the application of the force is followed by shock, but in some cases the patient may walk into the hospital and show no clinical evidence of impending danger. X-ray examination is a valuable aid in the diagnosis of this type of injury as it will demonstrate the presence of free air in the peritoneal cavity. If recovery occurs there will be very few if any sequelae. Among the possible sequelae are postoperative hernia and stenosis of the bowel.

Rupture of the kidney may be a subcapsular lesion or a complete division of the kidney substance. It is always followed by hematuria. Subcapsular injuries may be treated conservatively, but the more severe lesions require operation.

Rupture of the bladder is usually caused by a fracture of the pelvis or an external blow to the lower abdomen. Two cases of hydrostatic rupture were observed by the authors. Some persons with rupture of the bladder suffer immediate shock, whereas others are able to walk to the hospital. Early diagnosis may be aided by the finding of blood in the catheterized urine and by cystoscopy. Strangury, blood in the urine and pain in the lower part of the abdomen are signs of the greatest significance. The treatment indicated is closure of the wound as soon as the patient's condition will permit.

P. L. W. GREY, M.D.

Ochsner, A., and Graves, A. M. Subphrenic Abscess. *Ann. Surg.* 1933, 57: 96.

This article is based on 332 cases of subphrenic abscess collected from the literature and 50 cases observed by the authors.

Subphrenic abscesses occur much more frequently than is generally supposed, but as most subphrenic infections subside spontaneously the incidence of subphrenic infection without abscess formation is much higher than that of subphrenic infection with abscess formation. Subphrenic abscesses occur 3 times more frequently in males than in females. In the authors' series of cases no racial predisposition to such abscesses was apparent. Thirty-two per cent

of the patients were in the fourth decade of life, 21.70 per cent between the ages of nine and forty years.

Subphrenic abscess usually follows an intraperitoneal suppurative process. The most frequent antecedent conditions are perforated appendixes and perforated lesions of the stomach and duodenum. Of the total number of cases reviewed, appendixitis and perforated lesions of the stomach and duodenum were the original focus in 50 and 54 per cent respectively. The incidence of subphrenic abscess complicating acute inflammation of the appendix varies in collected series of cases from 0.34 to 6.1 per cent. The average incidence in 1101 cases of acute appendixitis was 1.1 per cent. The incidence is undoubtedly higher than these figures indicate because in many cases a subdiaphragmatic complication is not suspected. In the authors' series of cases in which positive cultures were obtained from the subphrenic space, colon bacilli were present in 40 per cent, streptococci in 40 per cent and staphylococci in 20 per cent. The most frequent site of subphrenic abscess is the right posterosuperior space. This space was involved in 28.8 per cent of the collected series of cases and 60 per cent of the authors' cases.

The clinical picture of subphrenic abscess is generally one of continued infection following an intra-abdominal suppurative process. Of the cases reported by the authors, the onset was sudden in 16 per cent and insidious in 14 per cent. In 1 per cent systemic manifestations continued following drainage of the original suppurative process. In addition to the systemic manifestations of infection there were localizing signs such as a sense of pressure in the upper abdomen or loin and difficulty in breathing, especially on deep inspiration. Persistent tenderness over the right twelfth rib or along the right costal margin in such cases is indicative of subphrenic infection. Limitation of respiratory movement together with elevation of the diaphragm occurs early. Diagnostic aspiration is contraindicated because of the danger of contaminating uninvolved portions of serous cavities. Intrapleural complications are usually due to delay of diagnosis and treatment of subphrenic infection.

In all cases of subphrenic infection in which suppuration has not occurred conservative treatment is indicated. When suppuration has developed incision and drainage should be done with care to prevent contamination of an uninvolved cavity. In 1072 reported cases of subphrenic abscess, 10 in which non-operative treatment was given, the mortality was 9.1 per cent, whereas in 1063 cases in which drainage was established it was 33.6 per cent. In the collected series of 89 cases of subphrenic abscess drained without contamination of the pleural or peritoneal cavities, the mortality was 21 per cent, whereas in 305 cases in which transpleural drainage was established it was 30 per cent and in 33 cases with transperitoneal drainage it was 3.5 per cent. In the authors' series the mortality following extraperitoneal transpleural and

transperitoneal drainage was 13.6, 50 and 41.6 per cent respectively. In order to prevent contamination of uninvolved portions of the pleural and peritoneal cavities, subphrenic abscesses should be drained both extraperitoneally and extrapleurally. In cases of abscess located in the right postero-superior space this can be accomplished best by the retroperitoneal operation. The authors describe this operation in detail. In 31 cases in which it was performed by them the mortality was 9.7 per cent.

Wimot, P. B. and J. Latel. J. Abdominal Ganglioneuromata (Ganglioneuromata). *J. de Ch.* 933, 1939.

The literature on abdominal ganglioneuromata is briefly reviewed from the first description of these tumors by Loretz in 1870.

Ganglioneuromata usually arise from the sympathetic nervous system and rarely from the peripheral sympathetic nerves. They develop occasionally in the central nervous system, neck, thorax, but most frequently in the abdomen from the retroperitoneal region.

The authors report the case of a girl sixteen and a half years of age who was subjected to laparotomy eleven years previously for a tumor of the left flank. As the growth was believed to be a sarcoma, nothing was done. At a second operation a neoplasm measuring 28 cm. in its greatest diameter and weighing 2 kgm. was removed. On section the tumor was found to be a ganglioneuroma. The appearance of microscopic sections prepared by different methods is described by the author in detail.

MARIE W. POOLE, M.D.



# GYNECOLOGY

## UTERUS

Morgan T A. Studies of the Movements of the Uterus. *J Obst & Gynaec Br Com* 1933 21 1196

A study of uterine motility was made by preparing uterine fistulae in rabbits and making records of the movements of the uterus in the unanesthetized animal. Four methods were found to yield satisfactory results. The recording method adopted was the use of a surface tension water manometer.

The influence of the sympathetic nervous system on the uterus was demonstrated by the fact that adrenalin constantly produced a well marked contraction of the uterus when given intravenously in doses of 0.1 ccm of a 1:10,000 solution. An immediate contraction occurred and was followed by a period of tetany with a gradual return to normal within four minutes in the average case. In animals which had received an injection of ergotoxin a subsequent injection of adrenalin within fifteen minutes produced no response. The inhibitory response to adrenalin was found to be inconstant. For complete paralysis of the sympathetic fibers a large dose of ergotoxin was necessary. Intravenous injections of 0.1 ccm of a 1:10,000 solution of pilocarpin produced an effect exactly similar to that produced by adrenalin. The effect of pilocarpin while unaffected by a previous injection of ergotoxin was completely cancelled by a previous injection of atropin. However the latter had no effect on the action of adrenalin. Section of the hypogastric nerves produced no alteration in the response of the uterus to these drugs.

The action of several alkaloids of cinchona were investigated. One milligram of quinine hydrochloride caused a transient rise in the tone of the uterus with a rapid return to normal while doses of 10 mgm produced a well marked increase in the tone with increased frequency of contractions followed by a return to normal in five minutes.

The hormonal control of the uterus was demonstrated by the use of non pregnant rabbits showing inactivity of the uterus. When these animals were given from 50 to 100 mouse units of progesterone intravenously a return to marked uterine activity took place within twenty-four hours in all. In several of them in which fistulae had been prepared and oophorectomy was done infrequent prolonged contractions occurring with great regularity and with fairly constant amplitude were noted. Oestrin in doses of 100 mouse units injected into these animals produced records indistinguishable from those obtained in the cases of intact animals with a live uterus. This effect began to be apparent in four hours reached its maximum in ten hours and began to decline again in forty-eight hours.

Animals showing a marked degree of uterine activity are in a state of heat a condition in which the concentration of oestrin in the blood is increased.

Within from sixteen to thirty hours after coitus the uterus becomes completely quiescent. It then remains in this state for sixteen days. The structure in the ovary responsible for uterine quiescence is probably the corpus luteum.

When extract of the anterior lobe of the pituitary gland was injected into animals with intact ovaries and poor uterine activity the uterine activity became that which is characteristic of oestrus within forty-eight hours and the activity thus induced persisted for many days. It is significant that whereas oestrin induced activity within ten hours extract of the anterior lobe of the pituitary gland did not induce activity in less than forty-eight hours. Extract of the anterior lobe of the pituitary gland injected into oophorectomized animals failed to affect the activity of the uterus. Any effect on the uterus produced by the anterior lobe of the pituitary gland must be produced through the ovaries. The author suggests that the extract and the ripening of the follicles thus increasing the production of oestrin.

ROBERT S. CROW, MD

Watkins R E. The Surgical Treatment of Cystocele and Prolapse of the Uterus with an Analysis of 113 Cases. *Surg Clin North Am* 1933 21 1502

The author contends that prolapse of the uterus, bladder and rectum occurs because of an opening (hernial in character) in the pelvic diaphragm, through which the organs descend. Elongation of the uterine ligament and dilatation of the vaginal canal develop secondarily.

The descending uterus carries with it the bladder and cul-de-sac. Cystocele always accompanies prolapse and the correction of the cystocele is a major part of the operative procedure.

To cure the hernia the opening must be closed by vaginal operation. Failure must invariably follow attempts to suspend the uterus by suture or by fixation to the abdominal wall, hysterectomy or shortening of the ligaments. In improperly selected cases even extensive plastic operations on the vagina and the pelvic outlet are followed by failure.

The 3 degrees of prolapse require different types of operation. Moreover the type of procedure must be based upon whether the woman is in the child bearing age or beyond.

In the case of a woman in the child bearing age who has a moderate degree of prolapse the bladder is separated from the anterior vaginal wall, a front of the uterus the bladder fascia dissected out and sutured, the anterior vaginal wall sutured to the

cervix and the perineum repaired and in many cases the ligaments are shortened through the abdominal incision.

In the cases of women beyond the menopause who have a uterus of normal size which does not protrude completely through the vagina the interposition operation of T. J. Watkins is the operation of choice.

In cases in which the uterus is small and the cervix protrudes completely into the vagina the Mayo method by which the uterus is removed and the ligaments are interposed between the bladder and vagina has been found satisfactory. Perineorrhaphy is also called for in both of these groups of cases.

Of 113 women whose cases are reviewed by the author 41 had undergone surgical treatment previously and of these 15 had had a previous reparative operation. In the case of 1 a complete vulvectomy for carcinoma had been followed within a year by complete prolapse.

Complete prolapse was present in 31 (27 per cent). It is this group to which special attention is directed. Two of the women had large enteroceles and many others had smaller enteroceles. Hypertrophy and elongation of the cervix were present in the majority.

The interposition operation of Watkins was performed in 36 cases, the operation of Mayo in 31, advancement of the bladder with a plastic operation on the cervix and perineum in 13, and some other type of procedure in 28.

There has been no mortality. Follow-up studies were made of 50 of the 113 patients. A complete cure was obtained in 34 cases and a satisfactory cure with minor defects and symptoms in 13. In 2 the operation was followed by a small recurrent cystocele and in 3 (in all of which the Mayo operation was done) by an enterocele. In 3 (6 per cent)—in 1 of which the interposition operation and in 2 of which a vaginopexy was performed—the result was a complete failure.

The author emphasizes the necessity for careful closure of the cul-de-sac. After removal of the uterus he dissects out the herniated cul-de-sac ties it off as high as possible and then unites the uterosacral ligaments according to the method of Ward.

G. PAUL LAROCHE, M.D.

Arnas N. and Emanuel A. Treatment of Chronic Cervicitis by Electrocoagulation. Results (T. Cervicitis des cervix et des canaux par l'électrocoagulation ult.). *Rev. Soc. Gyn. Ec. t. d. bas.* 933, 11, 805.

In electrocoagulation the tissues are coagulated by the heat of high frequency currents. This method differs from other heat and caustic methods in the fact that its action is exerted in the deep tissues and not on the surface. There is no destruction at the point of contact with the electrode. The latter remains cold and the elevation of temperature is produced within the tissues by the passage of the current. Different effects are obtained depending on the intensity of the current, the duration of its passage and the form of the electrode used.

If the current is passed between electrodes of different sizes the heated zone is a cone the base of which is the larger indifferent electrode and the apex of which is the smaller active electrode. This is called the unipolar method. If 2 small electrodes of the same size are used they both act as active electrodes. All of the part included between the 2 electrodes is heated and the results are obtained more rapidly than with the unipolar method. This is called the bipolar method.

Any diathermy apparatus may be used for the treatment. A very high power apparatus is not required as the necessary coagulation can be obtained with a current of 300 ma. The types of electrodes used are described and shown in illustrations.

The authors have treated over 300 patients by this method with uniformly good results. A dry whitish eschar forms as soon as the current is passed. After the tenth day the eschar begins to grow darker and by the twentieth day it has fallen off. The patient should be watched at this time a hemorrhage is possible though not frequent. The authors have never observed hemorrhage when the bipolar method was used. After the eschar has fallen off granulation tissue forms and epithelization takes place. Cure is complete by about the thirtieth day. The time required varies to a certain extent in different cases. Examination of biopsy specimens forty days after the treatment shows an epithelium completely normal in appearance. No scar tissue is formed, the tissues remain supple and there is no interference with future pregnancy or delivery.

Electrocoagulation is the treatment of choice in chronic cervicitis. It is contra-indicated in the acute stage and in the presence of any acute inflammatory process in the pelvis. The technique is simple particularly when the bipolar method is used. Since 1931 the authors have employed the bipolar method exclusively. No preliminary preparation is necessary, the treatment can be given without anesthesia and hospitalization is unnecessary. A single treatment is generally sufficient to destroy all of the diseased mucous membrane. No special care is required after the treatment. The patient should be warned that the discharge may become more copious and fetid for a while. She should be told to take a daily alkaline douche beginning twenty-four hours after the treatment and to return once a week for examination. In all of the cases reviewed rapid and permanent cure was obtained with no noteworthy complications. The discharge stopped and the cervix regained its normal rose color and elasticity.

AC. REY GOSS, MORGAN, M.D.

#### ADNEXAL AND PERIUTERINE CONDITIONS

LeLorier Y. and Durante G. Diverticula and Sperm Formations in the Fallopian Tubes (Diverticula et spermatozoa dans les trompes). *G. é. ob.* 933, 11, 59.

Congenital anomalies of the fallopian tubes are not rare. Accessory tubes have been described

These are either closed at both ends—so called blind accessory tubes—which sometimes form a hydro parasalpinx and sometimes terminate in the cul de sac with one end and rejoin the main lumen at the other.

Other anomalies are a supernumerary ostium and a lumen running independently from the main tube for a certain distance and then rejoining the normal tube. These anomalies have been described either as accessory tubes or tubal diverticula. The authors report a histological study of such an anomaly.

The first cross section showed a single and normal tube. The next section disclosed a diverticular dilatation originating from the cavity of the tube. This diverticulum expanded more and more and then produced a constriction which ended in the formation of a septum. Thus were formed two ducts separated by a thin layer of connective tissue. A section showed that the tube and diverticulum formed two lumina each with a complete wall.

Besides these congenital malformations there are also acquired duplications of the fallopian tubes. Under the influence of salpingitis a fringe of the tube attaches itself to the opposite wall. The inflammation progresses slowly along the border of the diseased fringe which finally forms a septum thus dividing the lumen of the tube. When the inflammation persists the fringe becomes thicker, its axis invaded by vessels and its stroma undergoes fibromuscular changes. The tube is thus divided into two lumina which are parallel like the barrels of a gun and separated by a wall each side of which is covered with tubal mucosa.

The accessory tubes, the diverticula and the inflammatory septa in the tubes have an important pathological significance. They are frequently the cause of ectopic pregnancy. The aberrant tubes are sometimes the site of benign and malignant neoplasms.

In conclusion the authors call attention to the possible confusion in the diagnosis between endometrioma and accessory tubes or simple diverticula caused by chronic inflammatory disease.

I. A. C. ANDREWSER, M.D.

Shaw, W. The Pathology of Ovarian Tumors. *J. Obst. & Gynaec. Brit. Emp.* 1933, 30, 2.

Of 300 ovarian tumors 38 were chocolate cysts. These were all cysts containing chocolate colored material within an epithelial lining. The author was careful to exclude cases of ovarian hematomata since old collections of this type are very difficult to distinguish from chocolate cysts. Ovarian hematomata are of 2 types—follicular and corpus luteum hematomata.

Whatever their cause chocolate cysts are frequently found with various forms of heterotopic endometrial proliferations and their histological structure suggests a relationship to the latter. The author reviews the various theories relative to these formations. He states that Rokitsansky was the first to describe adenomyoma of the uterus and on

Recklinghausen made a further contribution on tumors of this type in 1893. He cites Meyer's serosal theory to account for some of the cases of endometrial growths and call attention to the failure of Sampson's work to explain all heteroplasias. While it is extremely difficult to disprove Sampson's theory there are several strong objections to it. Chief among these is the fact that the theory does not explain adenomyomata of the umbilicus and adenomyosis interna. The more recent theory of Halban which has been accepted in part by Sampson explains all cases of adenomyosis and chocolate cysts by lymphatic spread from the endometrium of the uterus. The author does not accept this theory because in the examination of thousands of sections of adenomyomata and chocolate cysts he has never seen endometrial tissue in lymphatic spaces.

Shaw studied serial sections of all of the tumors in his cases. Grossly the largest tumor was 4 in diameter. The usual diameter was 2 in. All of the tumors were unilocular and almost all were detached down by adhesions so that they ruptured during their removal. Shaw emphasizes the fact that an epithelial lining was found fully developed only in the older specimens and not in small cysts.

In experimental work on rabbit in which the endometrial transplants to the peritoneum reported by Jacobson were repeated the results were similar to those obtained by Jacobson.

The author concludes that chocolate cyst of the ovary only rarely contain true endometrial tissue in their lining membrane. Early forms do not have an epithelial lining but pseudo-lutein cells are found in their wall. As the cyst develops the epithelium becomes better marked. It may form papillae and it may in some cases invaginate into the cyst wall. Shaw prefers the serosal theory to the theory of Sampson.

HARRIS W. FLEMING, M.D.

## EXTERNAL GENITALIA

Simon, H. E. Colpectomy. *J. Am. Med. Ass.* 1933, 101, 79.

Colpectomy is a reparative or corrective operation in giving complete anatomical and physiological loss of the vagina.

Prolapse of the vagina is its most frequent indication. It may be subtotal if the uterus is left in place or total with removal of the uterus.

Recurrences after the Watkins Wertheim interspersed operation for prolapse and cystocele may sometimes be corrected best by hysterectomy and colpectomy.

When vaginal hysterectomy is performed for prolapse efficient reconstruction of the perineum may be impossible on account of marked atrophy or extensive destruction of tissues. If there is not a sufficient contra-indication to vaginal obliteration colpectomy as an adjunct is preferable to a perineal reconstruction which will offer little prospect of permanent cure.

## MISCELLANEOUS

The subtotal colectomy of Le Fort in which the uterus is left in place provides for drainage of the secretions from the uterus and cervix by the formation of a transverse cavity beneath the cervix which communicates at each end with two lateral canals leading to the surface at the vaginal orifice. Such provision for permanent drainage is essential in all cases in which the uterus is left in place.

When the uterus is removed provision for drainage is not necessary and the entire vagina may be obliterated. In the original technique a vertical midline incision was made through the vaginal mucosa from just beneath the urethral meatus extending over the vaginal dome and down the posterior wall to the mid fourchette. The vaginal mucosa was completely removed laterally and the cavity obliterated by suturing together the anterior and posterior walls. A small rubber tube or bundle of silk worm sutures provided drainage from the upper portion of the cavity to the surface.

The objection to this operation is that it did not include reconstruction of the perineum which is essential for maximum support. The lateral fasciae and the remnants of uterine ligatures were not utilized to support the bladder; the latter therefore being permitted to sag against the rectum.

The author performs a modified total colectomy. Under sacral anesthesia a vertical incision is made through the vaginal mucosa from just beneath the urethral meatus and extended well above the cystocele. The vaginal mucosa is elevated well laterally and two or three sutures are deeply placed to bring the lateral tissue across beneath the urethra and lower part of the bladder.

The posterior vaginal mucosa is elevated and the levator muscles and adjacent tissues are exposed and sutured together as in the usual perineorrhaphy.

The remaining vaginal mucosa is then removed down to the mucocutaneous junction. In the presence of marked cystocele the ureters will drop well downward and backward but will not be easily injured if their altered position is borne in mind. Opening of the cul de sac which may occur at this time is without danger. Bleeding is accurately controlled by ligatures and hot packs.

The cavity is obliterated from above downward by a series of sutures of doubled heavy chromic catgut. The sutures are placed deeply in lateral structures and include only a very superficial bite in the anterior and posterior walls as they are passed across them. In the placing of the upper sutures care is taken to avoid the ureters. When the sutures are tied the lateral walls are approximated. Drainage is provided by a small tube or a bundle of silk worm sutures extending well up into the top of the cavity which is left in place for eight or ten days.

After the vaginal cavity is obliterated down to the mucocutaneous junction the mucocutaneous edges are accurately approximated. The drain is brought out posteriorly or in the midportion. A retentive catheter may be left in the bladder for ten days.

C. L. RILEY, F. D. B. IS, M.D.

Kosakoe J. Ohga T. and Okamoto S. Investigations Concerning the Excretion of the Ovarian Follicular Hormone in the Urine of the Human Female. I. Determination of the Hormone Content of the Urine of Normal Adult Women and Women with Uterine Hypoplasia. II. Determination of the Hormone Content of the Urine of Women with Uterine Cancer. *Jap J Ob Gyn* 1933, 1, 81-299.

The authors made quantitative determinations of the ovarian follicular hormone excreted during the menstrual cycles of five normal women and nine women with uterine hypoplasia. The estimates were made first by Zondek's method (ether extraction-saponification) but as the results obtained by this technique were less satisfactory than those obtained by a combined ether benzol extraction method the latter method was used exclusively in later investigations.

The results of the investigations show that the amount of hormone excreted during the menstrual cycle is subject to variation. The smallest amount is excreted during menstruation and the next days following. The excretion rate then increases gradually to reach a maximum directly before the next menstrual period. There is also a distinct though not as great nor as uniform decline at the time of ovulation. The smallest amount of hormone detected was 4 mouse units (during menstruation). The maximal amount 303 mouse units was detected just prior to menstruation. Hormones administered by injection at various times during the menstrual cycle are excreted quite promptly at a rate which depends upon the phase of the cycle and the amount of hormone injected. There was no important difference in the rate of hormone excretion between normal women and women with uterine hypoplasia. The authors draw the following conclusions:

1. Menstruation occurs normally when the amount of hormone in the organism has been reduced by excretion to a certain minimal level.

2. The corpus luteum apparently excretes large amounts of follicular hormone, a fact which must not be overlooked in hormone therapy.

3. Hypoplasia of the uterus of Grade 1 is due not to a deficient production of follicular hormone by the ovary but to defective response of the uterus to the hormones produced.

4. The dosage for ovarian hormone in replacement therapy must be regulated according to the phase of the cycle. It is necessary to give from 100 to 400 mouse units daily with an average dose of 200 mouse units.

Ten women suffering from uterine carcinoma were studied from the standpoint of the excretion of ovarian follicular hormone in the urine. In three cases the determinations were made according to the Zondek method and in seven by the combined ether benzol technique. The Allen Doisy test for the ovarian follicular hormone was positive in the urine of all women with carcinoma except those who

had passed the menopause. Women with carcinoma show a very irregular rate of hormone excretion, the amount at times being exceptionally great and at other times almost minimal. The total amount excreted in general does not exceed that excreted by normal adult women. Following extirpation of the uterus the amount of follicular hormone excreted tends to increase. Whether or not this is due to removal of the end-organ for the follicular hormone is not certain. When hormone is administered to such women its excretion is very slow or scarcely noticeable even when one or both ovaries have been removed.

As a result of these studies further problems for research have suggested themselves for example whether the excretion of the follicular hormone is determined by the carcinoma itself or is dependent upon the age of the patient. It is important to determine also the nature and the source of the hormone responsible for the positive Allen Doisy test. The authors believe that there is evidence to support the necro hormone theory of the origin of the hormone found in the urine of women with carcinoma.

HAROLD C. MACK, M.D.

**Whitehouse B. Some Aspects of the Menopause**  
*Ca ad a Jf Ass J 1933 XLIX 585*

The general metabolic processes in the female appear to coincide with the cyclic rhythm of the sex function. This is shown by variation in the bodily temperature, the calcium and iodine content of the blood, the basal metabolism, and the increase in the ammonia coefficient during the premenstrual phase.

It has been shown that a curve representing the basal metabolism automatically divides itself into four phases corresponding closely to the various stages of endometrial growth. During the premenstrual stage the metabolic rate gradually increases, reaching a maximum four or five days before the onset of menstruation. Two or three days before the discharge appears it falls suddenly to a minimum value. It then gradually rises until it is above normal. This phase is associated with the onset of the menstrual abortion. During menstruation the rate is higher than normal and is constant, varying less than 4 per cent. At the end of menstruation it falls suddenly to 8 per cent below normal.

These phases are so well defined and so constant that it is possible to determine the phase in which the uterine endometrium will be found from a study of the metabolic rate curve.

If an artificial menstrual period is initiated by the destruction of a mature graafian follicle or a developing corpus luteum, there is a disturbance of the basal metabolic rate which is typical of that described as normal for the natural function. Also at the time in the cycle when menstruation would normally have occurred if no surgical interference had taken place, a second typical menstrual rise and fall occur although as a rule they are unaccompanied by uterine hemorrhage. A secondary curve is thus

superimposed upon the normal cycle of the individual.

At the menopause ovulation is commonly frequent, irregular and patchy, this being reflected by marked variations in the metabolic rate. After double oophorectomy the subsequent metabolic curve continues for a time to show the usual menstrual disturbance although the variations are less obvious because the metabolic rate throughout the cycle is continually high.

The observations of Roberts show that the metabolic changes are not due to anabolic and katabolic phases in the endometrium or indeed in ovarian function as they continue when all ovaries and uterine tissue is absent.

They prove also that the cyclical rhythm is still being maintained at and after the menopause in the absence of a hemorrhagic uterine discharge which signifies the acme of sexual activity.

The author next considers the possibility of correlating these observations and experimental facts with the clinical data commonly associated with the menopause, natural as well as artificial.

Why does one woman escape whereas another suffers to such a degree that even a mental breakdown is possible? This question leads the author to conclude that more than one factor is involved and suggests that the decisive factor in the production of the clinical picture of the menopause is a breakdown in correlation between the two great essentials of the menstrual function which are designated by him as A and B—the ovulatory factor and the estrual factor.

As the menopause approaches the discharge of ova from the ovary becomes irregular. Some cells fail to mature and others take longer to mature than the usual fourteen days. In some cases an ovum ripens only at intervals of months and in a few instances a belated reproductive cell may not mature and rupture until two or three years after apparent cessation of the menses.

This delayed or late ovulation will explain some of the postmenopausal hemorrhages which while in themselves quite harmless necessitate a diagnostic curettage because of the possibility that the bleeding may be due to carcinoma of the uterine body.

A temporary increase in fertility commonly takes place at or about the age of cessation of the reproductive function so that some women have their only pregnancy at this time. This may be due to a process of speeding up in the maturation of the follicles or what might be described as a temporary mass production of reproductive cells.

The author emphasizes that the normal estrual disturbance takes place just the same after an artificial period produced by the excision of a mature follicle or corpus luteum and that this disturbance continues for a time in the absence of fresh ovulation. These facts in his opinion provide the key to the clinical picture of the menopause.

In the majority of women there is a definite rhythm in the seventy of the flushings of the meno-

pause if the menstrual rhythm had previously been regular. If dates are recorded it is found that the flushings reach their maximum at regular monthly dates which correspond to the menstrual period and to the fall in the basal metabolic rate associated with this epoch.

This is true also of other vasomotor symptoms such as headache and hemorrhages from various organs. Other records show similar regular menopausal bleeding from the nose, rectum and stomach and in one instance from the bladder. As the observations were extended it was found that the hemorrhage from the mucous surfaces gradually and spontaneously ceased.

The author emphasizes also that when hemorrhage occurs during the menopause either from the uterus or any other organ it always if severe enough relieves the subjective symptoms. Flushings, headaches and vertigo are relieved immediately. This is the reason why a woman who has occasional uterine bleeding from late ovulation during the menopause is rarely so troubled with vasomotor symptoms as a woman who ceases absolutely to menstruate at a given age.

It is believed that the vasomotor symptoms generally associated with the menopause are intimately related to a temporary excessive concentration of the sex hormone in the tissues. In other words the persistence of the oestral factor after the cessation of ovulation accounts for the flushings, headaches and vicarious hemorrhages which often render life miserable at this epoch. The rhythm of the vasomotor disturbances, their relief by occasional hemorrhages and the occurrence of similar manifestations during the amenorrhoea of pregnancy and that following double oophorectomy all support this theory.

Further experimental evidence is available in the presence of the anterior pituitary like hormone in the urine during the acme of these symptoms. Additional proof is offered by the results of the administration of oestrin at the menopause.

There is a feeling that the virtue of many of these hormonal so-called cures for the menopause lies in the oestral uterine hemorrhages that they may produce and their clinical application appears to be rather homoeopathic.

The work of Hannan suggests that the flushings are the result of increased tonus of the sympathetic nervous system brought about by unbalanced action of the suprarenal glands.

Hannan found that the intravenous injection of 10 minims of a 1:1000 solution of adrenalin chloride always gives rise to an immediate attack of flushing in women suffering from these disturbances. Thyroid sensitizes the body cells to the action of adrenalin. Therefore it should not be given to women at the menopause if these conclusions are correct. Hannan attributes the unbalanced action of the suprarenals to withdrawal of the restraining influence of an ovarian hormone but the author believes that a hypothesis of constant antagonism between the ovary and the adrenals is unnecessary.

He is of the opinion that either the suprarenals or possibly the sympathetic system itself is stimulated by accumulated sex hormone unrelieved by natural menstrual hemorrhage or that the suprarenals are the source of the sex hormone.

He is inclined to think that many of the preparations on the market at present if effective at all are double-barrelled weapons. The oestrin they contain may succeed in producing uterine hemorrhage. If so the vasomotor symptoms may be temporarily relieved. On the other hand oestrin may act like adrenalin as in certain of his cases by exaggerating the flushings and heats or producing vicarious hemorrhages from other mucous surfaces.

Therefore he has recently adopted the very converse of drug treatment at the menopause, reverting to the old practice of blood letting in cases in which intense flushing and especially headache have called for active treatment. The results have confirmed his opinion regarding the cause of the clinical symptoms.

The author's practice consists in removing 20 ccm of blood daily for two or three days until the symptoms are relieved.

Whitehouse has noted that women who experience flushes in spite of the fact that they are menstruating usually have several hemorrhages. These extreme flushes he believes are due to excess of circulating sex hormone the flushes being an index of that excess. The urine contains a large amount of hormone in such cases.

On the other hand women who gravitate into a state of sexual old age without vasomotor symptoms are the fortunate few in whom a decrease in the production of sex hormone synchronizes with the termination of ovulation. It will be found that such women are normally very unresponsive to sympathetic stimulation. They are placid in temperament and unaffected by various nervous impulses.

If it is true that the syndrome of the menopause results from an unbalanced excess and action of the sex hormone then it is obvious that rational therapy must be based not upon the administration of more of this substance but rather upon the exhibition of an antidote.

An antidote to oestrin is insulin and insulin has been used in the treatment of uterine hemorrhage of hormonal origin. Voigt records that in fifty women treated by injections of insulin the results were so constant that if the bleeding is not controlled he does not hesitate to attribute it to uterine rather than ovarian causes. Because of the antagonism of oestrin and adrenalin it appears possible that insulin might prove a useful addition to the therapeutic armamentarium at the menopause. In cases of severe menopausal headaches and flushings in which the author has used it the results have been such as to justify its use in a larger series of cases.

With regard to the artificial menopause reference is made to the investigations of Wilson on the immediate after results of several hundred hysterectomies. The following conclusions were drawn:

1 Conservation of the ovaries after hysterectomy by no means always relieves the symptoms of the artificial menopause

2 Vasomotor symptoms are frequently less marked in cases in which the ovaries are removed with the uterus than in cases in which ovarian tissue is conserved

3 In the cases of young women double oophorectomy and hysterectomy are frequently not followed by marked menopausal symptoms and the nearer the time of operation to the natural age of the menopause the more marked are the vasomotor and nervous manifestations

ANTHONY F. SAVA, M.D.

## CORRESPONDENCE

### TOTAL VERSUS SUBTOTAL HYSTERECTOMY

To the Editor In this year's first number of SURGERY GYNECOLOGY AND OBSTETRICS (p. 1 of INTERNATIONAL ABSTRACT OF SURGERY) Doctors Gardner and Finola publish a valuable review (with bibliography) of recent literature on malignant tumours of the uterus. The question of cancer of the cervical stump is briefly dealt with and begins with the statement: "Any comment on cancer appearing in a cervical stump calls forth a violent protest from the advocates of routine (total) hysterectomy; they contend that such cancers are avoidable."

As a gynecologist who has always since the end of last century performed the total operation and not once the subtotal, I would like to comment on this part of the review.

That cancer of the stump is avoidable by total hysterectomy requires no protest, violent or other; it is a self-evident fact. If the cervix has been completely removed, the patient cannot get cancer in it.

The authors refer to my paper "Total Abdominal Hysterectomy for Myoma" (B. I. M. J. 1932, 1: 1157) to which, as a serious contribution to an important subject, I would refer readers, since the above review, no doubt for want of space, does not deal with the questions involved as fully as my paper. Then the authors say: "Spencer makes the astonishing assertion that cancer of the stump is 100 times more likely to develop in a cervical stump than in a cervix to which the corpus is still attached." My

statement (*loc. cit.*) is based on the results of enquiry by two advocates of the subtotal operation (Peham and Amreich) who found that it occurred 27 times more frequently in the stump of the amputated uterus. They had observed 8 cases amongst 253 amputations. My reason for the statement that it occurred more than 100 times more frequently was based on the frequency with which cancer of the stump is met with, which I gave evidence to show is at least 3 per cent. Dr. V. Graff of Iowa met with it in 7.9 per cent of cases of cervical cancer seen. Dr. G. G. Ward of the Woman's Hospital, New York, in 7.2 per cent of the cases seen. Gosset and Wallon (*Clinic. Og.*, 1932, p. 150) in 4.6 per cent. The average of these 3 observers gives a percentage for cancer of the stump of 6.5 of all the cases of cancer of the cervix seen, or more than twice the figure used in making my computation. Doctors Gardner and Finola are astonished at my statement. I like Clive before his judge, stand astonished at my moderation.

Whatever be the increased frequency of cancer after amputation, there is other evidence than that of Peham and Amreich of amputation as a cause. Eg. of Labhardt's 3 cases of cancer of the stump occurred in virgins in whom cancer of the cervix is extremely rare. May I appeal to my American colleagues to save their patients from this avoidable disease by performing total hysterectomy preferably by Doyen's method.

HERBERT R. SPENCER, M.D.

London, England.

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Romanelli C The Relation of Vitamins to Mammary Function and the Intra Uterine and Extra Uterine Development of the Fetus (Le itin in rap t il funz o e mman d all ilupp intr el e tra uten dell to) *J ch d tel e g c* 933 I 535

The author reviews the literature on the relation of vitamin deficiency to fertility pregnancy and offspring and then reports his observations on the effect of large doses of the combined vitamins on pregnancy lactation and the newborn His observations were made in the following experiment

Eight groups of two pregnant women each were selected The patients in each group were matched as closely as possible with regard to the stage of their pregnancy their health and other factors so that one of them could be used as a control The vitamin preparation of Lorenzini a globule containing all of the vitamins in a certain desired proportion (not specified) was employed To one patient in each group a globule was given twice a day for from fifteen to twenty days prior to delivery To the other no additional vitamin was administered All of the women were ambulatory and on a general unrestricted diet Comparisons were made of the health of the mothers the quality of the milk as ascertained by repeated analyses and the height weight and principal measurements of the babies

The so called hypervitaminized group of women were in better health clinically than the controls began lactation earlier (second and third days after delivery) and had more abundant milk and a more plentiful supply of the principal milk elements The babies of these women had an average birth weight (220 gm) above that of the controls and above that of previous babies born of the same woman a lower initial weight loss with a more rapid return to the birth weight and greater bone density narrower sutures and smaller fontanelles than the control However they showed no appreciable difference in height

The author believes that the greater fetal development has an important clinical application in the borderline cases of dystocia due to contracted pelvis

GEORGE C FRYOLA MD

Kretschmer H L Heaney N S and Ochsky E A Dilatation of the Kidney Pelvis and Ureter During Pregnancy and the Puerperium A Pelvic Study in Normal Women *J Am M A* 933 c 05

Of fifty-nine women with a normal history and normal findings in the genitourinary tract dilatation of the ureters and kidney pelvis occurred during

pregnancy or the puerperium in all The dilatation was almost always above the pelvic brim and increased progressively with the development of the pregnancy Lateral displacement of the ureters also increased as the pregnancy advanced

In spite of the dilatation and displacement pyelitis did not develop in any case No relationship between the presentation and position of the fetus and the ureteral changes could be determined

HAROLD M BRILL MD

Kellogg F S Placenta Praevia *New England J M d* 1933 cci 201

On the basis of a study of 437 consecutive cases of placenta praevia at the Boston Lying In Hospital in the period from 1895 to 1933 Kellogg lays down the following rules

- 1 Do not dilate the cervix to any degree
- 2 Do not temporize with a bleeding caesarean at home
- 3 Do not examine a bleeding patient vaginally unless prepared to deliver immediately
- 4 Do not examine rectally
- 5 Do pack the cervix or vagina before the patient is hospitalized

Accouchement force has no place in the treatment of placenta praevia of any type Its mortality in the period from 1895 to 1935 was 19 per cent Extremely conservative delivery from below by Braxton Hicks version and the use of the Voorbees bag as practiced during the period from 1925 to 1935 also had a high mortality—8.25 per cent in the total number of cases and 23 per cent in the cases of complete placenta praevia with a fetal mortality of 27 per cent In 62 of 134 cases of delivery by caesarean section in the period from 1925 to 1933 there was a mortality of 8 per cent and in 72 cases with delivery from below a mortality of 6.8 per cent This shows that the combined method of treatment is best

On the basis of the mortality the author concludes that as a rule caesarean section is better than delivery by vagina when the baby is not in good condition and that delivery from below gives excellent results if the cervix is carefully protected from laceration by force When there is danger that the extraction of the baby may result in a lower segment rupture craniotomy is preferable

In a case of uterine rupture in an exsanguinated patient it is safer to sacrifice the ovaries along with the uterus and stop the blood supply at the infundibulo-pelvic ligament where it can be controlled most easily In the cases of moribund patients a Braxton Hicks version should be done the breech held in position until normal delivery occurs and a transfusion given simultaneously Hysterectomy can be done later if coagulation continues In cases of



The authors believe that morphine is the most valuable of all sedatives. It rarely has an unfavorable effect upon either the mother or the child. It is much safer than many of the toxic barbiturates now in use. Its effect is intensified and prolonged by giving it in a 50 per cent solution of magnesium sulphate. In many cases no change in the frequency or duration of uterine contractions was apparent. In some cases the intervals between the pains were prolonged but the pains were increased in intensity. Opoidine in doses of  $\frac{1}{4}$  gr. was often found to be more effective than  $\frac{1}{4}$  gr. of morphine.

Observations on the effect of morphine on the infant showed that spontaneous respiration took place no matter how late the drug was administered. In an investigation of the cause of delay in the establishment of respiration in the newborn it was found that in 9 of 600 cases in which the birth of the infant was delayed morphine had been administered to the mother within four hours of delivery. No difference was noted between the infants in these cases and the infants born in cases in which delivery was delayed by an unknown cause. Resuscitation was effected by means of carbon dioxide and oxygen instead of by the old methods of artificial respiration which have been abandoned because they are regarded as dangerous.

In the second stage of labor and during delivery nitrous oxide and oxygen gave the best results. The duration, strength and frequency of the contractions increased in over 50 per cent of the cases. There were no cases of postpartum hemorrhage due to the administration of anesthetic drugs.

ROLAND S. CAON, M.D.

Waegell, C. The Use of Oxytocic Drugs During the Period of Dilatation. Considerations of the Causes of the Onset of Labor (*Les oxytociques dans la période de dilatation. Réflexions sur les causes du déclenchement de l'accouchement*). *Rev. méd. de la Suisse Rom.* 1933, lxxv, 87.

In summarizing the indications and contraindications for the use of oxytocic drugs during labor the author discusses three commonly employed preparations namely quinine pituitrin and thymophysin.

Quinine while among the oldest of ecboic agents is the least efficacious. It is effective only in small doses whatever the method of administration and serves merely to sensitize the uterine musculature to other stimulants. Only when it is used in combination with other drugs (castor oil pituitrin) can fairly consistent effects be obtained.

Extract of the posterior lobe of the pituitary gland when administered indiscriminately in large doses during the first stage of labor is extremely dangerous and may result in uterine tetany, uterine rupture or fetal asphyxia. When it is administered in repeated small doses (preferably from 0.1 to 0.3 c.c.) during the first stage in cases of primary or secondary inertia effective contractions can be initiated without danger to mother or child especially

if the uterus has been sensitized previously. Administration of quinine or the membrane been ruptured. The course of labor can usually be expedited and instrumental intervention can be avoided. However strict attention to and close observation of the patient are necessary.

Thymophysin (a combination extract of the thymus and of the posterior lobe of the pituitary gland) is equally efficacious in cases of inertia and equally harmless to the mother and child but the author cautions against the administration of doses greater than 0.5 c.c. As there is no danger of uterine tetany when normal contractions are augmented by oxytocic drugs he does not agree with Temesvary that this preparation is indicated in normal cases to expedite labor. For the induction of labor thymophysin is of no value. Pituitary combination with castor oil and quinine gives the best results although its success varies directly with the proximity of the pregnancy to full term.

Oxytocic drugs are indicated during labor in cases of primary or secondary inertia, rigidity of the membranes, rigidity of the soft parts of the pelvis, breech presentations, eclampsia, placenta previa and for the induction of labor near or after maturity. They are contraindicated in cases of marked pelvic contraction, transverse presentation, abnormal position of the head, abnormal development of the fetus and the birth canal, contraction ring, cardiorenal disease and excessive uterine distention (twin pregnancy, polyhydramnios).

In speculating upon the cause of the onset of labor the author advances an hypothesis based on the pituitary-ovarian hormone relationships in pregnancy. The follicular and corpus luteum hormones are antagonistic in their effect upon the uterine musculature: the former stimulates and sensitizes it and the latter keeps it at bay through its inhibitory effect upon the follicle. During the greater part of pregnancy the amount of luteal hormone increases while the amount of the follicular hormone diminishes. As pregnancy approaches term the balance is reversed and the uterus becomes more irritable and sensitive to the effect of extract of the posterior lobe of the pituitary gland. The change in the ovarian hormone balance is due directly to the change in the quantity of the hormones secreted by the anterior lobe of the pituitary gland. During the greater part of pregnancy the quantity of luteinizing hormone secreted by the anterior lobe of the pituitary gland is greater than the amount of follicle stimulating hormone but at the end of pregnancy there is a reversal of this relationship leading to atrophy of the corpus luteum, absence of progesterone and a preponderance of follicular hormone which increases the irritability of the uterus and makes it respond to the effect of the hormone of the posterior lobe. According to the author's hypothesis this mechanism explains also certain cases of spontaneous abortion.

which can be prevented by the administration of adequate amounts of corpus luteum hormone

HAROLD C. MACE, M.D.

Bertin E. J. Separation of the Symphysis Pubis with a Report of Five Cases. *Am J Rtg* 1933 2: 197

Separation of the symphysis pubis probably occurs more frequently than the older statistics indicate. The cases may be divided into two general classes: (1) those in which the condition complicates childbirth, the larger group; and (2) those in which it is due to severe trauma.

The articulation between the pubic bones is an amphiarthrodial joint formed by the junction of the two articular surfaces of these bones. The bones are held together by four strong ligaments, one on each surface. It is debatable whether or not slight motion exists in the joint normally. However, it is generally accepted that during the pregnancy there is a definite relaxation or softening of all of the pelvic ligaments which may permit a separation even before delivery. The cause of the separation is no doubt the pressure effect of the advancing head on the pelvic ring, the latter giving at its weakest point. Frequently forceps are a factor. When the pubic bones separate, separation occurs at least in the anterior portion of one or both sacroiliac joints.

The clinical picture and diagnosis most often follow an unusually difficult labor, especially one in which high forceps were used. Following delivery, the patient complains of pain in the pubic region and lower back which radiates down the thighs and of difficulty in moving the legs even when she is in bed. When she gets up the pain is more severe and walking is very difficult. A definite separation and movement of the pubic bones may be felt with each step. The objective signs are usually characteristic. The gait is a peculiar waddle due to the instability of the pubic arch and the malalignment of the hip joints to the body is frequently so typical that a diagnosis can be made from this alone. There is definite tenderness over the symphysis and one or more fingers may be inserted between the pubic bone. There may be tenderness over one or both sacroiliac joints. Motion may be demonstrated at the pubes by manipulation of the legs and thighs. The diagnosis may be made or confirmed by roentgen examination.

The treatment is immobilization of the symphysis pubis by strapping a belt or plaster.

Five cases are reported with their X-ray findings.

J. THORNELL WILKERSON, M.D.

Coethal T. R. Breech Deliveries with Reference to X-ray Measurement of the Fetus and Maternal Pelvis. *Am J Obst & Gyn* 1933 1: 75

Stereoroentgenometry provides a method for antepartum measurement of the fetal cranium and the maternal conjugata vera.

In 62.8 per cent of eighty-seven breech presentations, presumably accurate measurements of the fetal head were obtained at the first attempt. In 37.2 per cent of the cases, measurements were impossible because of the movement of the fetus in the uterus.

Control measurements of the infant's head taken after delivery and within seven days of stereoroentgenometry indicated that the stereoroentgenometric measurements were accurate within 5 mm. in 100 per cent of the cases and accurate within 3 mm. in from 75 to 95 per cent.

Stereoroentgenometric measurements of the conjugata vera are difficult to control with any degree of mathematical accuracy. However, they were confirmed in the two cases in the author's clinic in which control measurements were possible at operation or autopsy.

In the case of a primipara with a breech presentation, stereoroentgenometry gave a confirmatory indication for cesarean section.

EDWARD L. CORNELL, M.D.

Stemons J. M. Hemorrhage Following Cesarean Section. *J Obst & Gynec* 1933 1: 656

Of the common causes of postpartum hemorrhage—uterine atony, lacerations, and retained placental fragments—only atony is of importance after cesarean section. Imperfect suturing of the uterine incision increases the danger of hemorrhage and the danger is especially great when the incision passes through the placental site.

The author reports two cases of postpartum hemorrhage, one of which was fatal. In the fatal case the uterus was not removed. The hemorrhage appeared half an hour after the cesarean section in the fatal case and five and a half hours after the operation in the case in which hysterectomy was done. The pathological report in the latter case was as follows:

The central parts of both walls of the uterus appeared normal while the lateral portions presented a bluish mottled appearance suggestive of that found in certain cases of premature separation.

Before delivery the patient presented symptoms of a toxemia of pregnancy. A classical cesarean section was done.

The author recommends hysterectomy if the hemorrhage is not quickly controlled.

EDWARD L. CORNELL, M.D.

## NEWBORN

Blackfan K. D. and Yaglou C. P. The Premature Infant: A Study of the Effect of Atmospheric Conditions on Growth and on Development. *Am J Dis Child* 1933 1: 175

The authors carried out experiments in the care of prematurely born infants with automatically controlled humidity, temperature, and ventilation. These experiments covered the years from 1926 to 1929 and were compared with the results obtained

in unconditioned rooms in the period from 1923 to 1925. An attempt was made to keep the factors of medical care, feeding and clothing as constant as possible in the two series. In the conditioned rooms the infants were kept in bassinets with proper covering but not in incubators. The infants under observation ranged in weight from 1 $\frac{1}{2}$  to 5 lb.

The premature infants varied according to weight and age in their response to heat and cold; the smaller ones being less thermostable and hence reacting less favorably to change than the larger ones. In the lower weight groups the temperature was normally slightly lower and attempts to maintain a body temperature of 98.6 degrees F. were not always advisable. A humidity of 65 per cent with a temperature range from 75 to 100 degrees F. was found to be most satisfactory for premature infants, but infants weighing over 5 lb. reacted rather poorly to these conditions. The lower humidity (50 per cent) necessitated a somewhat higher room temperature. Under the high humidity, the initial loss of weight was less, the gain in length and weight was greater, gastro-intestinal symptoms were considerably less frequent and of much shorter duration and the temperature level was more constant. These phenomena were less favorable under the conditioned low humidity and least favorable in the unconditioned rooms. The general net mortality from infection (excluding infants admitted with infections) was 26.5 per cent in the unconditioned rooms, 9.7 per cent in the conditioned room with the low humidity, and 0 in the conditioned room with the high humidity.

As the series reported for the unconditioned rooms covered an earlier period when the medical treatment of premature infants was less advanced, some allowance should perhaps be made for the discrepancy, but the figures for the low and high humidity

conditions were obtained during the same and are directly comparable. The authors call the conclusion that a humidity of 65 per cent, a room temperature of from 75 to 100 degrees are best for the premature infant.

HELEN S. ACKER, J. V.

#### MISCELLANEOUS

Peralta Ramos A. and Valentinu I. M. Proliferation Inactivity and Hormonal Activity in the Different Types of Mole (La actividad proliferativa en la actividad hormonal en la hidatidiformación). *Boletín Soc. de Obst. y Ginec. de Bue. Aires* 19, 492.

The authors report two cases of hydatidiform mole and the findings of a histological study of specimens in one of them. They draw the following conclusions:

1. The Aschheim-Zondek reaction was of no prognostic value.

2. The absence of toxic symptoms, the constancy of the size of the uterine tumor and the histological signs of regression pointed to chorionic hypoplasia and proliferation inactivity.

3. The positive hormonal reactions after development of the mole had ceased may be attributed to (a) continued slight activity of chorionic epithelium, (b) storage of the hormone from a period of greater activity and (c) the anterior lobe of the hypophysis. Perhaps a small amount of proliferating epithelium may be sufficient to cause an intense reaction.

4. These cases demonstrate that early intense toxemia may be absent in hydatidiform mole and that the tumor although dead may persist for a long period of time during which the Aschheim-Zondek reaction remains strongly positive.

M. E. MORSE, D.

# GENITO-URINARY SURGERY

## ADRENAL KIDNEY AND URETER

Braasch W F The Practical Application of Excretory (Intra enous) Urography *J Am M A* 933 c 848

Since the introduction of excretory urography the procedure has been most often referred to by the term intravenous urography which was adopted to distinguish it from cystoscopic or retrograde urography. By Europeans it has been referred to also as descending or excretion urography. Excretory urography would seem the more logical term as it is physiologically descriptive and in view of recent and promised advances in oral administration would be quite acceptable.

Excretory urography should be employed as a routine procedure in the diagnosis of abdominal lesions. It will prove of most value in revealing stasis in the renal pelvis or ureter and aiding in the interpretation of shadows in the upper urinary tract and in the estimation of renal function.

It will prove of value also though to a less extent in the recognition of renal tumor tuberculosis and anomaly. It will always be an important aid to the urologist in conditions in which cystoscopy and ureteral catheterization are impossible or inadvisable. It should be of much help in determining the presence or absence of stricture of the ureter. It should be of great help also in determining the necessity for the surgical treatment of renal ptosis. The data which it gives should be complementary to other urological data. In only a limited field will they entirely replace the latter.

Skarby H G Rupture of Hydronephrosis (Ueber Ruptur von Hydronephrose) *Arch Sc d* 933 lx u 36

The author reports a case of traumatically ruptured hydronephrosis in a man fifty years of age. The patient died after having shown improvement for a week. Operation was not performed.

Following a review of the various pathologico-anatomical theories regarding the condition and seventy cases reported in the literature Skarby draws the following conclusions:

1. Careful recording of the history is of great importance.
2. The condition has a spontaneous onset in about 25 per cent of cases.
3. In the most acute cases the picture of peritonitis is presented strikingly often and as a rule nothing abnormal is found in the urine under these circumstances. In such cases examination of the urinary tract frequently yields valuable information.
4. After the onset of the illness there is not infrequently a latent period of usually less than a month

before mechanical disturbances are produced by the growing swelling (retroperitoneal effusion).

5. As in cases in which it appears in direct relation to the trauma this effusion is usually manifested by a rapidly growing swelling of large size.

6. The enormous swelling is usually in marked contrast to the fairly satisfactory general condition.

7. Hematuria occurs in about half of the cases.

8. In extremely exceptional cases spontaneous cure may result.

9. Primary nephrectomy after due control of the function of the other kidney is unquestionably the best treatment.

Bragnuolo G Hematogenous Renal Infections and RENO Ureteral Denervation (Infezioni ematogene re ali ed enervazione ureterale) *Arch Ital d Ch* 933 xiv

The author reports experiments which he carried out on dogs to determine the effect of reno ureteral denervation on the localization of hematogenous infection in the kidney. Denervation of one kidney was done and at varying intervals thereafter a suspension of attenuated staphylococcus pyocyaneus aureus was injected intravenously. The infection frequently caused the formation of small focal abscesses in the denervated kidney whereas the intact kidney remained uninvolved.

The localization of the infection was attributed to the dilatation and retention in the renal pelvis and ureter that occurred as a result of the loss of motility and contractility of the pelvis and ureter following the denervation. The author believes also that denervation causes a change in the vascular tone of the kidney and probably trophic disturbances in the kidney cells.

PETER A ROS M D

Redi A N W Possibility in Renal Surgery The Connections of the Kidney to the Omentum the Spleen and the Splenic Epiploic Vessels An Experimental Study (Possibilita nella chirurgia renale. I connessioni del re con l'epiploica e i vasi milza e splenici) *Arch Ital d Ch* 933 lxxxv 273

The problem of experimentally producing changes in the blood supply of the kidney is a very old one. The methods of doing it may be divided into two groups. In the first group are the natural methods of using collateral circulation with or without ligation of the renal vein. In the second are the artificial methods: (1) decapsulation with or without ligation of the renal vein; (2) decapsulation followed by covering with omentum; (3) nephrotomy with plugging into the kidney of strips of omentum; (4) connection of the liver and kidney or spleen and kidney; and (5) renorenal connections.

The author gives a brief discussion of these methods and then reports experiments he carried out chiefly on dogs to study the behavior of the kidney covered with omentum and deprived of the vein or artery or both as evidenced by physiological roentgenological and histological findings. At the same time he investigated intrarenal omentalization and splenorenal connection. He showed that in improving the collateral circulation of the kidney wrapping of the kidney with omentum was no more effective than decapsulation or the natural collateral paths. He believes this is true also of intrarenal omentalization by the Parlavocchio technique. He has worked out a method of epiploic splenorenal neo-angiosomosis a procedure consisting in the preparation of small bunches of vessels isolated from the splenic or omental group and their insertion into a gutter running from pole to pole of the kidney between the cortex and medulla. By this procedure a definite and sufficient neo-angiosomosis is obtained. Repeated Lethen's experiments on the splenorenal connection. He concludes that this connection is an excellent method of emptying the kidney but in itself cannot maintain a renal function compatible with life. He states that he will report later some further studies of the splenorenal connection in which he will attempt to obtain complete deviation of the venous circulation of the spleen into the kidney.

ELGENE T. REDD, M.D.

Campbell M. F. Vascular Obstruction of the Ureter in Juveniles. *Am J Surg* 1933 21: 527

Campbell reviews the literature and reports seven cases of vascular obstruction of the ureter in juveniles. He states that as a rule the condition is diagnosed as chronic pyelitis and allowed to progress unless a complete urological examination is made. He urges conservative surgery chiefly vessel resection or ureteroplasty whenever this is possible but states that in far advanced renal destruction infection or calculus disease nephrectomy is indicated. He emphasizes the absolute necessity of a modern urological examination in cases of persistent urinary infection.

HARRY W. FLAGGMEYER, M.D.

Wheeler Sir W. I. Dec. Stone in the Ureter. *Proc R Soc Med* 1933 26: 533

In a general discussion of stone in the ureter Wheeler reports his opinion with regard to the cause, diagnosis and treatment of the condition. In support of his contention that the diagnosis is frequently missed he cites records showing that one patient out of every five with a ureteral stone was operated upon for appendicitis. In the decision as to the advisability of operation for the removal of a ureteral stone apparent destruction of renal function must not be confused with true destruction. Removal of an obstruction is often followed by almost complete return of renal activity. Wheeler favors operative removal as operation is a certain and rapid procedure

whereas cystoscopic methods are often unavailing and slow. He states that in 80 per cent of the stones which have recently moved into the portion of the ureter can be dislodged by operative procedures.

FRANK M. COCHREAN

## BLADDER, URETHRA, AND PENIS

Hyams J. A. Kenyon H. R. and Krame. Urethrocytography in the Male. *J Urol* 1933 21: 30

In discussing urethrocytography as an aid in the diagnosis of pathological changes in the urinary tract the authors describe a simple method consisting of a 2-oz syringe which is supplied by pass and trap so that a manometer can be attached when injections are made into the urethra. In the cases reviewed the pressures employed ranged between 150 and 160 mm. excessive pressure may result in mucosal edema, urethrovaginal backflow. Urethrovaginal backflow occurred in several cases but only in those in which manometric control of the injection was employed.

The authors have used a 3 per cent sodium iodine solution and a solution of sodium bicarbonate and sodium iodide. They emphasize the importance of using only solutions which are non-irritating, miscible with urine, non-toxic and which are less if introduced into the circulation. The first X-ray exposure with the patient in the oblique position on the table the lower leg flexed, penis resting on the thigh and the second exposure with the patient in the dorsal position. These positions permit the detection of pathological changes in the bladder, prostate, posterior urethra, anterior urethra. On rare occasions the ejaculatory ducts and seminal vesicles may be visualized.

Contra-indications to this procedure are urethritis, active inflammation and recent trauma.

J. SIDNEY RITTER

## GENITAL ORGANS

Lowsley O. S. The Prostatic Problem. A Study Based on Dissections of the Prostate. *J Am Med Assn* 1933 21: 1769

Lowsley believes that many patients who are operated upon for a prostatic condition might have been relieved by irrigations, prostatic massage and douches. He states that resection of the prostate seals the prostatic ducts and thus prevents drainage.

He believes that transurethral resection is limited to operations on the floor or lower portion of the vesical sphincter. He advocates daily operative irrigations and the passage of solutions.

In eighty-nine cases of vesical neck resection the mortality was 0.11 per cent. Of 17 deaths three were due to urinary extravasation, the peri-urethral and intra-abdominal regions.

six to cerebral hemorrhage pneumonia carcinoma or uræmia in men of advanced age

The lowest mortality 4.8 per cent occurred in cases treated by perineal prostatectomy

J SIDNEY RITTER M D

Sargent J C Some Dangers and Difficulties of Transurethral Resection *J Urol* 1933 xxv 559

The author believes that in similar case transurethral resection of the prostate is somewhat more safe and simple than prostatectomy. He prefers to perform it under spinal anesthesia as in the use of anesthesia of this type the possibility of explosion when electrical apparatus is employed is avoided. However as there is usually a drop in the blood pressure incident to the induction of spinal anesthesia the use of this type of anesthesia is associated with the possibility of the occurrence of severe and even fatal hemorrhage from the operative field when the blood pressure reaches the normal level on the patient's reaction from the anesthetic.

One of the chief dangers of transurethral surgery is sepsis. Therefore preoperative and postoperative care is of great importance. In seventeen of the earlier transurethral resections performed by the author there were eight deaths all of which were due either directly or indirectly to pyelonephritis. Drainage must be free uninterrupted and continued for a sufficient length of time.

Resection appeal to the average patient because it does not require an open operation and it necessitates less hospitalization and hospital expense. Resection without cystostomy for drainage is a radical departure from the technique of prostatectomy because the catheter used for postoperative drainage must be much smaller than the suprapubic drainage tube. As the smaller tube is the sole means of drainage the removal of clots or pieces of resected tissue is more difficult. If the catheter should slip out all drainage of the bladder will stop at once. When reliance is placed on catheter drainage urinary continence is reestablished much earlier than in either suprapubic or perineal prostatectomy.

Epididymitis associated with resection is a comparatively minor complication but must be recognized as one of the potential dangers. In a certain number of patients being prepared for resection by catheter drainage an unusual amount of infection of the genital tract occurs. In the cases of such patients section of the vas should be done before the operation.

In conclusion the author reaffirms his confidence in the future of section as he finds the procedure being increasingly safe and satisfactory. In the first twenty-five cases in which he performed the operation there were nine deaths, the same in the last twenty-five there were only three deaths. Sargent ascribes the decrease in the mortality to the following factors: (1) increased familiarity with the operative procedure (2) more careful control of the blood pressure during the operation (3) more

respect for the long-established principles of adequate drainage (4) more intelligent pre-operative and post-operative care and (5) the fact that cystostomy was performed in seven of the last twenty-five cases but in only one of the first twenty-five.

CLAUDE D HOLMES M D

Burdick C C and Coley B L Undescended Testicle *Am Surg* 1933 cxviii 495

Discouraged by the end results of other operations for undescended testicle the authors in 1926 tried Torek's technique in selected cases. The results were so satisfactory that during the last five years they have adopted this method as a routine procedure. They agree with Torek that the stretching and development of the scrotum are the factors preventing retraction of the testicle.

The operation is best performed between the ages of eight and twelve years. At this age the testicle has been given time to descend spontaneously if it will. It is larger and easier to manipulate and the structures are identified more easily than at an earlier age and the testicle may be placed in the normal position before puberty. If a large hernia is present earlier operation is indicated.

The incision employed for inguinal hernia is used. In making this incision it is important to bear in mind the possibility that a superficial inguinal sac may be present just beneath the superficial fascia. The aponeurosis of the external oblique is reflected the cremaster is split in the direction of its fibers and the sac vessels and testicle are delivered. The sac is opened near the internal ring but at a sufficient distance from it to prevent a possible tear in the sac from extending into the ring. Gentle traction on the testicle brings out the natural cleavage planes between the sac and the vas and vessels. With clamps on either side of the opening in the sac the vessels and vas are separated with blunt pointed scissors. The sac is cut across and the upper end separated from the vessels. This procedure is simplified by introducing a blunt retractor into the internal ring and lifting it upward. The sac is then transected and ligated and the redundancy excised. This procedure cures the hernia. The lower end of the hernial sac is excised close to the testicle and all fascial bands between the internal ring and the testicle are removed so that the vessels and vas are denuded of their coverings. This step is very important. In the authors' cases division of the spermatic artery and vein to lengthen the cord has not been necessary. If it is done atrophy usually follows.

An oblique incision 1/4 inch long is next made down to the fascia lata on the inner surface of the thigh at a site where the testicle lies without undue tension. The bottom of the scrotum is distended with gauze and then incised the incision corresponding in length and direction with that of the thigh. The posterior lips of the two incisions are sutured together. Torek advised interrupted sutures of catgut but the authors use a continuous suture of a subcuticular type. The testicle is then brought down through the

scrotal wound and sutured to the fascia of the thigh. The anterior margins of the thigh and scrotal wounds are sutured together with a continuous suture of silk. The hernia is then repaired.

On completion of the operation the knees are strapped together to prevent tension. The sutures are removed on the ninth or tenth day. At the end of two weeks the patient is discharged.

By the end of two or three months the scrotum has stretched to or nearly to normal size. In the second stage of the operation which is done at that time or if necessary is delayed until later the testicle is gently released from its bed in the thigh through an opening in the scrotal edge and covered without tension.

In cases of bilateral undescended testicle the testicles are brought down one at a time. At the second operation the first testicle is released and the second is brought down to be released later.

Of a series of 137 cases in which the operation has been completed excellent results have been obtained in 123. The failures were due to technical errors such as failure to divide the fascial bands, tension on the ureter, or infection. Five testicles sloughed, 2 because of infection and 3 because of tension. Nine testicles became atrophic, probably because of interference with the blood supply caused by tension on the vessels.

In conclusion the authors state that the results of this procedure are far superior to other methods.

CLAUDE D. PICKRELL

#### MISCELLANEOUS

Volante F. Soft Bacterial Calculi of the Urinary Tract (*Sui calcoli batterici molli della vie urinarie*). *Arch Ital di urol* 1933 x 305

Only about thirty cases of soft bacterial calculi of the urinary tract have been recorded. Following a review of the literature the author reports cases and describes experiments which he carried out on animals to determine the cause of such calculi.

Soft bacterial calculi consist of a nucleus composed of a mixture of proteins, bacteria, and which is surrounded by a stratified precipitate of protein containing in its spaces numerous cocci, bacteria. These calculi are to be differentiated from bacterial albumin or amyloid calculi. The author believes that their pathogenesis depends on the precipitation of the protein of the urine about a desquamated epithelium or erythrocytes which is without the precipitation of salts and is followed by multiplication of the organisms included in the precipitated protein. The stratification depends on the intermittency of the conditions permitting precipitation.

PETER A. ROSS

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES JOINTS MUSCLES TENDONS ETC

Comolli A Surgery of the Parathyroids With  
Special Reference to Parathyroid Osteoses  
(Chi ga d li pa au o di n sp ciale nguard  
alla n teo pa i ode ) Pal d Rome 1933 vi  
cz p at 599

The author reviews the more important experimental pathological and clinical studies of parathyroid disease beginning with those of Erdheim in 1906. He states that while the results of parathyroid deprivation and the relationship of the parathyroids to calcium metabolism are fairly well understood the large field of dysfunction of the parathyroid glands and the relationship of such dysfunction to changes in the metabolism of calcium and phosphorus the skeletal system and the neurovascular system is as yet relatively unexplored. It is known that hyperfunction of the parathyroid glands is associated with generalized changes causing symptoms predominantly referred to the skeleton but the generalized chronic osteo arthropathies are understood today little better than many years ago.

Lievre has abandoned the old classification of osteoses due to parathyroid dysfunction which had a morphological basis and has substituted for it a classification with a physiological basis. He divides the conditions into three main groups: (1) conditions of the type of Paget's disease, (2) dystrophies of calcification and (3) the various types of parathyroid osteitis. In all of these conditions the physiopathological changes are similar consisting in mobilization of the bone calcium with decalcification of the skeleton, increased elimination of calcium from the organism and metastatic calcification in the soft tissues. As a rule the basis of these changes is hyperfunction of the parathyroid glands. Sometimes this is associated with true adenoma formation.

The syndrome occurs most frequently between the ages of twenty and seventy years. It develops without obvious predisposing factors and with the insidious onset of pain of varying intensity in different parts of the skeleton. Later symptoms are asthenia, pallor, loss of weight and skeletal deformities especially in the spine, lower extremities and pelvis. Pathological fracture, circumscribed osseous tumors, premature loss of teeth, urinary symptoms from the increased excretion of calcium and hypotonia and hypo excitability of the skeletal muscles are common. Changes in the circulatory and gastro intestinal systems are less frequent.

The changes shown by roentgen examination are multiform, inconstant and at times almost insignificant. Most characteristic is some degree of diffuse decalcification of the skeleton. The normal

osseous structure is lost and replaced by an irregular distribution of the trabeculae. Cyst formation is not uncommon. In the terminal stages the decalcification and atrophy may be so advanced that the skeleton is no longer visible in the roentgenogram.

Chemical examination of the blood usually reveals an increase in the calcium content at some stage of the disease. This is associated with a marked increase in the calcium in the urine. The blood phosphorus is normal or is slightly decreased by an increase in the phosphorus in the urine.

The course of the condition is slow but progressive with continued aggravation of the symptoms unless surgical treatment is given. Death ensues in from one to ten years.

Pathological examination frequently but not constantly reveals hyperplasia of one or more parathyroids. Often this is marked. The structure of the enlarged so called adenoma differs little from that of the normal gland. The changes in the osseous system are related to lacunar absorption with myelofascia, medullary fibrosis, disorganized new bone formation and at times osteoporosis with or without the presence of osteoid tissue. Deformities are noted especially in the femora. In addition to these bone lesions metastatic calcification and secondary changes in other viscera may be found.

The treatment indicated for these various syndromes is surgical removal of the parathyroid tumor or in the absence of a tumor of one or more of the parathyroid bodies even though they may appear normal. A most thorough examination and exploration of the neck is necessary because of the possible presence of accessory parathyroid bodies and the fact that a parathyroid gland may be entirely embedded in the thyroid. Sometimes exploration without the removal of tissue is beneficial possibly because of the disturbance it produces in the blood supply. Proper treatment is followed by an immediate decrease in the calcium content of the blood and urine, arrest of the skeletal lesions and gradual recalcification of the bones. The same treatment has been used with varying success in arthritis deformans, scleroderma and vascular lesions of the extremities such as Buerger's disease. As a rule roentgen therapy is not beneficial. The administration of Vitamin D and irradiation with ultraviolet light have proved ineffective. A. LOUIS ROSE, M.D.

Ottolenghi C.E. The Diagnosis of Osteo Articular  
Tuberculosis by Biopsy of the Regional Lymph  
Nodes (Diagnosic d la tub c losi b t oar  
tumul p r la bi psia g ngi ona ) Rev de ri p y  
t aumol 933 11

The author describes his method of diagnosing tuberculosis of the bones and joints of the limbs by



biopsy of the lymph nodes draining the lesion. He believes that the procedure is original since he has found no mention of it in his review of the literature. His work is based on Lance's clinical research on the topography of the adenopathies associated with tuberculosis of various bones.

Ottolenghi reports in detail with roentgenograms and microphotographs thirty-two cases in which, in addition to the usual clinical and roentgen examinations, comparative studies were made of the results of lymph node biopsy, direct biopsy of the lesions and inoculation of joint fluid when present into guinea pigs. The lymph nodes were examined microscopically, culturally and by inoculation.

The series includes seventeen undoubtedly positive cases (tuberculosis of the knee, femur, hip, foot, elbow and wrist), eight doubtful and seven control cases (joint syphilis, rheumatoid arthritis). Of the undoubtedly positive cases, lymph node biopsy was positive in fifteen (83.5 per cent). In nine cases (52.9 per cent) the diagnosis was made by this method alone. In the eight doubtful cases, lymph node biopsy was negative, although two proved to be tuberculous and the nature of four remained undecided. Therefore, of the total nineteen tuberculous cases, the method was positive in 78.4 per cent. In the control cases it was negative.

The author concludes that lymph node biopsy is of great value. The adenopathy appears within the first few months, is easily detected in external lesions and has specific characteristics. In some instances the nodes may appear normal or show only a non-specific inflammation and yet prove positive on inoculation. Lymph node biopsy is preferable to direct biopsy because of its harmlessness, the extreme simplicity of the technique and the higher percentage of positive results. It can be practiced under all conditions at all stages of the disease and on all patients. It allows a positive diagnosis in cases without effusion and in a considerable number of cases it is the only positive finding. It merits further trial.

M. E. MORSE, M.D.

**Ultramaré J. H.** Malacia of the Scapoid Bone of the Caispa. Pathogenesis and Treatment. (La malacia de la capoid carp. n. I. t. g. n. e. t. r. a. t. m. e. 1.) 5 h. med. II. h. sch. 933 u. 950.

The disease under discussion was described by Reuser in 1910 as osteitis cystica and by Kienboeck as lunatum malacia. Similar changes were described by others later. The author briefly describes the disease picture and emphasizes that trauma is responsible for the origin of the condition. Sometimes the trauma may be very slight. In a case reported by Houzel the changes first appeared thirteen years after the accident. Mueller attempts to explain these changes by the special reaction of the bone to various conditions of pressure. According to Jansen there is an accommodation of the bony structure to its function. Every increase in pressure causes a displacement of the bone salts. Excessive pressure leads to softening (resorption of the bone).

Even Kienboeck recognized the re Koehler's disease. Preiser suggests that rarefying osteitis due to rupture of the contents of the band. Leriche and Fontaine describe the disease as a peculiar sort of Sudeck's osteoporosis. The author thinks that posttraumatic origin of these changes since hemorrhages are found in the scapoid after trauma. At any rate the changes after unrecognized fractures of the scapoid.

The author believes that as a result of a period of immobilization a pseudarthrosis which later undergoes transition into a malacia. Such a pseudarthrosis was observed by Moreau by means of a bone transplant. Cases removal of the scapoid bone had been reported.

Sci.

**Brallford J.** Spondylolisthesis. 2 p. 933 u. 955.

Spondylolisthesis is a deformity of the joint produced by the gradual slipping of a lumbar spine on the sacrum. Although unknown it is a definite pathological entity and must be differentiated from other known causes such as those due to tuberculosis and syphilis. The dissection shows a backward displacement of part of the disk into the spinal canal and progression of the pedicle of the fifth lumbar vertebra over the surface of the fifth lumbar vertebra. The same plane as the upper surface of the disk until it has moved so far forward that it covers the anterior surface of the vertebra.

In the causation of the condition factors of the anterior and posterior segments of the arch is probably a factor. Another factor is trauma in the growing child. It has been shown that in adults trauma sufficient to cause partial dislocation of the lumbosacral joint, rupture of the neural arch does not cause spondylolisthesis. Pregnancy, occupational strain, acute lumbosacral angle are not factors.

The lateral roentgenogram is difficult because the shadows of the pelvic bones obscure the lumbosacral joint. In the anteroposterior view a characteristic bowline caused by the face of the fifth lumbar vertebra projecting over the first sacral body. This line has been observed in cases studied and is diagnostic. Care must not be confused with the D-shaped line of ossification of the anterior lumbosacral condition frequently found in laborers.

M. E. L. I.

**Perron A.** Normal Ossification and Manifestations in the Anterior Table of the Tibia. (De l'ossification normale du tibia.) Rev. de l'hist. 933 u. 949.

There is a difference of opinion not only as to the causes of the anterior tubercle but also as to its nature.

tibia but also with regard to the normal ossification of this tuberosity. From roentgen studies the author concludes that as a rule ossification takes place chiefly from the epiphysis although in some cases it takes place entirely from centers of ossification in the tuberosity itself and in other cases entirely from the epiphyseal centers. Ossification may occur at any time between the ninth and fourteenth years of age. The tibia unites first with the epiphysis and then with the diaphysis. Persistence of a clear space between the tuberosity and the diaphysis is not pathological even when it is noted at an advanced age.

Pathological conditions of the tuberosity are generally grouped under the name Schlatter's disease or anterior tibial apophysitis. The author gives the history of a case operated on in Ombard's clinic and supplements his report with roentgenograms and photomicrographs. He concludes that there is no true inflammation and that therefore the name apophysitis is incorrect. He proposes the name apophysiolysis. He believes that the condition is an acquired dystrophy in a tuberosity that is partially ossified and has undergone disintegration. In the case he reports there was a fibrosis or girdling in the cortex and invading the entire tuberosity leaving only a nucleus of bone. In this respect the disease is comparable with coxa plana which is a dystrophy of the upper epiphysis of the femur. Under the influence of weight and possibly other factors the dystrophic metaphysis of the femur becomes deformed with the development of coxa plana while the dystrophic anterior tuberosity of the tibia yields to the traction of the patellar ligament and the pathological fracture which the author calls apophysiolysis occurs.

ADOLF S. MORAN, M.D.

## SURGERY OF THE BONES JOINTS MUSCLES TENDONS ETC

Blanco H. Diaphysectomy in Osteomyelitis (Diaphysectomie pour ostéomyélite). *Rev. d'orth. et de chir. orth.* 933 v. 497.

In the cases of osteomyelitis reviewed the Orr method of treatment often yielded excellent results and shortened the period of hospitalization. However, in extensive cases this operation is insufficient and a necrotic zone which cannot be eliminated spontaneously will remain.

It is generally agreed that the treatment of acute osteomyelitis should be immediate operation. The procedure indicated may be simple incision and drainage of a periosteal abscess or sequesterectomy of the medullary cavity, amputation and resection combined or resection of all or the greater part of the diaphysis.

The indications and benefits of complete diaphysectomy are still subjects of discussion. In the author's experience the dangers and disasters attributed to this method by some authorities have not been noted. However the method should not

be used in all cases. Of 152 cases of osteomyelitis treated in the author's clinic only 10 were treated by total diaphysectomy. The results were so encouraging that Blanco believes the method should probably have been employed more frequently.

Blanco reserves total diaphysectomy for cases in which the entire diaphysis has been converted into a sequestrum and enclosed in a shell of bone formed as the result of separation of the periosteum. Such a massive sequestrum cannot be extruded spontaneously. Because of the inadequacy of conservative operations and very late radical operations, radical diaphysectomy should be performed earlier in such cases. Osteomyelitis should be regarded as a septicæmia with the original focus in bone. As in the treatment of all septicæmias the cause should be eradicated early and completely.

The proper selection of cases for early resection is difficult. The patient's general condition will not serve as a criterion. Of much greater importance is the extent of the local process. In cases of sufficient duration the periosteum is usually separated over a wide extent but this separation does not always run parallel with the intraosseous infection. Total resection is indicated especially in cases in which subperiosteal abscesses are present, the bone is pale, there is little or no bleeding, and the separation of the periosteum extends throughout the entire circumference of the bone.

The article contains several roentgenograms showing complete regeneration of bone after total resection of diaphyses in the extremities.

WILLIAM R. MEER, M.D.

Lenormant C and Ménégaux G. Functional Results of Orthopedic Resection of the Elbow in Traumatic Ankylosis (Résultats fonctionnels de la résection orthopédique du coude dans l'ankylose traumatique). *P. soc. méd. P.* 933 No. 9, 1809.

In the authors' opinion the best operation for traumatic ankylosis of the elbow is that devised by Olier almost fifty years ago. Even the muscle interposition recommended by Quenu and others does not seem to have improved the results so far as reankylosis and flail joints are concerned. The authors think this is a useless complication.

At the International Congress in 1923 MacAusland defended arthroplasty as opposed to resection but arthroplasty of the elbow is only an economical resection with modelling of the joint surfaces and the interpretation of a free flap of aponeurosis. In spite of the enthusiasm of Anglo-Saxon surgeons with regard to this operation it does not seem to be at all superior to Olier's operation and is more difficult than the latter to perform. The authors believe that even in cases of complex traumatic ankylosis associated with considerable deformity such as those reported in this article it could be impossible.

The authors report three cases treated by the Olier operation. In one of them a complete resec-

tion was done with modelling of the bone ends to each other. In the two others hemi resection was performed the upper radio-ulnar joint being spared. The authors believe that possibly this was a mistake as free resection (at least 4 or 5 cm according to Ollier) seems to give better results. The best results were obtained in the case of complete resection. In all of the cases the most careful postoperative treatment was given. Mobilization was begun from eight to ten days after the operation and for the first few weeks was given by the surgeons themselves. The functional result was poorest in the case of a patient who was unwilling to carry out the post operative treatment as long and thoroughly as necessary.

The procedure described can be used not only in traumatic ankylosis but also in gonorrheal ankylosis, tuberculous arthritis (a case of which is reported) and cases of ankylosis at a right angle. While the objection may be made that in the latter the solidity of the joint may be damaged a flail joint may be avoided if a good technique is used and many patients would prefer to sacrifice a little solidity in order to recover mobility.

AUDREY GOSS MORGAN M D

Putti V. Wire Traction in Operative Elongation of the Femur (La trazione col filo nell'artroscopia per il femore). *Chirurgia* 1933 xviii 103.

Putti reports nine cases of operative elongation of the femur by wire traction. The patients ranged in age from fourteen to twenty two years. The indications for the operation were: unilateral dislocation of the hip operated upon by the method of Lorenz; five cases congenital dislocation of the hip which healed with a marked coxa vara; external rotation shortening and mild flexion; one case coxitis which healed with flexion and adduction; two cases and flexed knee following poliomyelitis in which a supracondylar osteotomy was indicated; one case. In the last four cases osteotomy was indicated for some other reason besides the lengthening. The shortening in these cases ranged from 3 $\frac{1}{2}$  to 10 cm. Most of the case reports are supplemented with roentgenograms.

The technique is described in detail. It includes the application of fine wires for traction and countertraction followed by osteotomy and the application of weights. Two millimeter wires are used. One wire is placed in the supracondylar portion of the shaft and the other in the trochanteric portion. The application of the upper wire may present difficulties because of the varied position in pathological cases. Therefore the author inserts this wire under direct vision. The osteotomy is oblique. Its length depends upon the lengthening desired. Traction is applied with the hip and knee joints in semi flexion at an angle determined by checking with the roentgenogram so that the axis of traction is fairly exact. The amount of weight is determined on the basis of the age, degree of development and weight

of the patient and the findings of roentgen control every three days. The greatest resistance to lengthening occurs from the third to the fifth days. After the desired length is obtained the wire is maintained for two or three days. A spica cast including the wires is then applied for immobilization. This is worn for two months. At the end of that time another cast permitting movement of the knee and leg is worn for three months more.

The complications and errors which Putti encountered to date are listed. In only one case there was evidence of paresis of the external peroneal nerve during the lengthening and this was easily avoided by increasing the flexion of the hip and temporarily decreasing the amount of traction. In two cases the upper wire was not securely inserted and reinsertion was necessary. This was obviated by inserting the upper wire under direct vision. Since the use of the 2 mm wire the bone has not broken. Countertraction is essential, proved by failure in the two cases in which it was not used. Of special interest is the fact that there were no vascular disturbances in the extremities.

A. LOUIS ROSE

## FRACTURES AND DISLOCATIONS

Bergensfeldt E. Traumatic Separations of the Epiphyses of the Long Bones of the Extremities. A Clinico-roentgenological Study (Beiträge zur Kenntnis der traumatischen Epiphyseal-Disseparationen der Extremitätenknochen). *Acta Orthopædica Scandinavica* 1933 lxviii 5 pp. xviii.

This is a report on 310 traumatic epiphyseal separations in the long bones of the extremities of patients treated at the Surgical Clinic of the Hospital, Stockholm in the period from 1925 to 1932. In all of the cases the diagnosis was confirmed roentgenologically and the patient followed up. Seventy-two of the separations which occurred in 67 patients were recent. To determine the causes, especially the factors favoring subsequent growth, 19 cases of injuries of the conjugate other than true separation (mostly perforation of the conjugate cartilage due to nails) were included.

Traumatic epiphyseal separation occurs more frequently in boys (232 of the cases reviewed) than in girls (63 of the cases reviewed). It is common in the second decade of life (246 cases), especially the period from ten to seventeen years of age (224 cases) and much less common in the third decade (49 cases).

The lower radial epiphysis was separated in 107 of the cases reviewed; the lower humeral in 109; the lower tibial in 44; the lower ulnar in 24; the fibular in 16; the upper radial in 8; the upper humeral in 5; the upper ulnar and the trochanteric in 2 each; and the lower femoral and upper tibial in 1 case each.

With regard to the etiology the following conclusions are drawn:

1. In no case could the separation be considered with certainty or even probability as having occurred spontaneously.

2. In a few cases (1 case of decidedly slight trauma and 2 cases of familial occurrence at the same age associated with certain constitutional peculiarities) it was impossible to exclude a pathological process in bone or cartilage entirely as the true or contributory cause of the separation.

3. Among the recent cases was a case in which it was impossible entirely to exclude a pathological separation (the lower tibial epiphysis of a four year old girl with a heavy body build who sustained only a very slight trauma).

4. The so-called traumatic epiphyseal separations of the long bones of the extremities are probably produced entirely accidentally but it is impossible to rule out the occurrence of sporadic cases in which the mode of production is analogous to a pathological process in bone or cartilage in conformity with that accepted for epiphyseolysis capitis femoris.

5. Pathologically the following groups of epiphyseal separations can be recognized: Group 1 those without any other demonstrable injury whether in the form of a lamella (too small to justify the name of fracture) or a true fracture; Group 2 those presenting signs of lamellation but not a true fracture; Group 3 those combined with fracture of the diaphysis; Group 4 those combined with fracture of the epiphysis; Group 5 those combined with fracture of the diaphysis and epiphysis; and Group 6 juxta epiphyseal fracture.

Pure epiphyseal separations occurred in 38.4 per cent of the cases reviewed. Of these 23 (7.4 per cent of the entire number) were found roentgenologically to be pure epiphyseal separations no damage to adjacent parts of the diaphysis or epiphysis being detected and the separation following the epiphyseal line.

Pure epiphyseal separations (Groups 1 and 2) were most frequent during the first half of the second decade of life. This is contrary to the view widely held that pure epiphyseal separations occur almost exclusively in early childhood.

Epiphyseal separations of Group 3 occurred in 55 of the cases reviewed; those of Group 4 in 10 cases; those of Group 5 in 13 cases; and those of Group 6 in 4 cases.

The lamellar sign was found in 165 cases. In such cases the separation probably followed the entire line of ossification. In 2 cases it seemed to have occurred entirely through the cartilage. In the others there was no definite indication of a closer anatomical location of the fracture line within the conjugal cartilage (except the juxta-epiphyseal fracture). In most of the cases of Groups 4 and 5 it is probable that there was a fracture of the conjugal cartilage itself.

The prognosis for union, consolidation and function is no less favorable than in analogous para-articular fractures occurring in the period of growth. However in 3 of the cases reviewed there was short-

ening of the injured bone. Consequent inhibition of growth with persistent shortening of the injured bone occurred in 14 cases examined after true epiphyseal separation. In no case was there any abnormal increase in the growth of the injured bone. In some cases shortening may be compensated for by increased activity not only on the part of the damaged conjugal cartilage but also on the part of that at the opposite end of the bone but there is no compensation through increased growth of the part of the extremity above or below the injured bone.

The following factors may be considered as causes of inhibition of growth with persistent shortening:

1. A direct lesion of the proliferating cartilage (most common).

2. Complete dislocation of the separated epiphysis the detached surfaces having lost all contact with one another or some other very marked dislocation. Because of roentgen control this probably occurs rarely. A moderate and sometimes even a fairly marked dislocation does not necessarily disturb growth.

3. Marked damage to vessels with consequent lack of nutrition of the conjugal cartilage (only with entirely intra-articular epiphyses).

4. Possibly in exceptional cases processes occurring experimentally after epiphyseolysis such as more indirect injuries to the conjugal cartilage without a direct lesion of this cartilage at the separation barriers of callus at the diaphyseal end and secondary degenerative processes in the cartilage. These probably produce only a temporary arrest of growth and slight shortening.

5. Infection (practically only in compound separations).

Except in dislocations and occasionally in cases of marked damage to vessels and cases of infection it generally appears impossible to influence the causes of shortening therapeutically.

Consecutive arrest of growth with persistent shortening after traumatic separation of the epiphysis occurs much more rarely in man than in experimental animals as in man there is generally no time for persistent traces because the period of growth is much more prolonged. Moreover the conjugal cartilage in man seems to possess a much greater resistance even to direct mechanical lesions. Direct injuries to the cartilage have led to persistent shortening only exceptionally. Even if the prognosis as regards consecutive arrest of growth therefore appears fairly favorable it seems impossible in the individual case of epiphyseolysis to exclude future shortening of the injured bone with certainty. Accordingly it is wise to take this possibility into consideration. In such cases of epiphyseolysis combined with fractures of the epiphysis and the diaphysis particular care is necessary in determining the prognosis.

With regard to cases with osteosynthesis through the conjugal cartilage or some similar damage the following conclusions are drawn:

tion was done with modelling of the bone ends to each other. In the two others hemi resection was performed the upper radio ulnar joint being spared. The authors believe that possibly this was a mistake as free resection (at least 4 or 5 cm according to Ollier) seems to give better results. The best results were obtained in the case of complete resection. In all of the cases the most careful postoperative treatment was given. Mobilization was begun from eight to ten days after the operation and for the first few weeks was given by the surgeons themselves. The functional result was poorest in the case of a patient who was unwilling to carry out the post operative treatment as long and thoroughly as necessary.

The procedure described can be used not only in traumatic ankylosis but also in gonorrheal ankylosis, tuberculous arthritis (a case of which is reported) and cases of ankylosis at a right angle. While the objection may be made that in the latter the solidity of the joint may be damaged a flail joint may be avoided if a good technique is used and many patients would prefer to sacrifice a little solidity in order to recover mobility.

ADREY GOSS MORGAN M.D.

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of the patient and the findings of roentgen control every three days. The greatest resistance lengthening occurs from the third to the seventh days. After the desired length is obtained the weight is maintained for two or three days. A plaster cast including the wires is then applied for immobilization. This is worn for two months. At the end of that time another cast permitting movement of the knee and leg is worn for two months more.

The complications and errors which Putti encountered to date are listed. In only one case there is evidence of paresis of the external popliteal nerve during the lengthening and this was easily by increasing the flexion of the hip and temporarily decreasing the amount of traction. In two cases the upper wire was not securely attached and reinsertion was necessary. This has been obviated by inserting the upper wire under vision. Since the use of the 2 mm. wire the wires have not broken. Countertraction is essential, proved by failure in the two cases in which it was not used. Of special interest is the fact that there were no vascular disturbances in the extremities.

A. LOUIS ROSS M.D.

## FRACTURES AND DISLOCATIONS

Bergensfeldt E. Traumatic Separations of the Epiphyses of the Long Bones of the Extremities. A Clinicoroentgenological Study (Beiträge zur Kenntnis der traumatischen Epiphysealgetrennungen an den Extremitätenknochen der Extremitäten). *Klin. chr. roentgen. med. Stud.* 1933 xiii 221.

This is a report on 310 traumatic epiphyseal separations in the long bones of the extremities of patients treated at the Surgical Clinic of the Hospital Stockholm in the period from 1919 to 1933. In all of the cases the diagnosis was verified roentgenologically and the patient followed. Seventy two of the separations which occurred in 67 patients were recent. To determine the causes especially the factors favoring subsequent arrest of growth, 19 cases of injuries of the conjugate epiphysis other than true separation (mostly perforations of the conjugate cartilage due to nails) were included.

Traumatic epiphyseal separation occurs more frequently in boys (232 of the cases reviewed) than in girls (63 of the cases reviewed). It is common in the second decade of life (216 cases) especially the period from ten to sixteen years of age (224 cases) and much less common in the first decade (49 cases).

The lower radial epiphysis was separated in 10 of the cases reviewed; the lower humeral in 10; the lower tibial in 44; the lower ulnar in 24; the fibular in 16; the upper radial in 8; the upper humeral in 5; the upper ulnar and the trochanter minor each in 2; and the lower femoral and upper tibial each in 1 case.

With regard to the etiology the following conclusions are drawn:

1 Osteosynthesis with perforation of the con-  
jugal cartilage connecting the epiphysis with the  
diaphysis is not associated with such great risk as  
animal experiments suggest. Of 24 such cases only  
2 resulted in shortening. In 1 case the shortening  
was probably due to very gross mechanical injuries  
to the cartilage and in the other to primary damage  
to the cartilage.

2 If osteosynthesis is necessary, care must be  
taken to avoid damage to the cartilage as much as  
possible. The use of Rissler's nails for fixation does  
not seem to arrest growth. Three cases of premature  
synostosis (without demonstrable shortening) and 1  
case in which the nail could not be regarded as  
entirely blameless for the shortening demonstrate  
that complications are not impossible following this  
method of treatment. Louis N. UELT M.D.

Bonnet G. Two Cases of Atlanto Axial Dislocation  
Without Spinal or Medullary Symptoms. Failure  
of Orthopedic Treatment. Bolting With an  
Albee Graft as a Precaution. (Deu. obser. u. s.  
de dislocation atlanto-axiale sans troubles bulbo-  
medullaires. L'echec du traitement orthopedique.  
Verrouillage de la suboccipitale par le greffon d'Albee.  
J. Soc. de chir. 1933 I 1296)

The author reports two cases of dislocation of  
the atlas on the axis with fracture of the base of  
the odontoid process. The first was that of a cavalry-  
man twenty-eight years of age who was thrown in  
jumping a hurdle and fell on his left cheek. The  
other was that of a man twenty years of age who  
was struck on the head by a heavy weight. In  
neither case were there any disturbances that could  
be attributed to injury of the spine or medulla.  
Reduction was attempted by suspension and the  
application of a plaster cast. This treatment failed  
to correct the condition and is associated with the  
danger of sudden death from slipping of the bones  
and injury of the cord and medulla. To eliminate  
this danger the author thought it advisable to fix  
the occiput to the spine by an Albee graft. The  
operation was performed under local anesthesia in-  
duced with novocain. A graft measuring 10 by  
cm was cut from the tibia. The patient, as placed  
on the table in a reversed Trendelenburg position  
with his head elevated, his neck bent and his  
shoulders raised. A flap was cut in the tuberosity  
of the occiput and the end of the graft engaged in  
it. The graft was then twisted a quarter of a turn  
engaged in a slot made in the spinous process of  
the axis and fixed in place by suturing the muscles  
over it with catgut around a small subcutaneous  
drain. The head was fixed in a plaster cast.

Three months after the operation there was a  
solid column of bone uniting the occiput with the  
third cervical vertebra. In profile the nape of the  
neck appeared to be a direct prolongation of the  
posterior surface of the occiput. Movement was  
still limited, occurring only in the lower half of the  
cervical column. It is believed that the amplitude  
of the movements will increase later. While this

method does not result in complete anatomical and  
functional restoration it protects the patient from  
the possibility of sudden death and secondary  
quadriplegia. The operation should not be per-  
formed immediately after the accident as there is  
then too much danger of displacing the bones during  
the operation with fatal results. It should be pre-  
ceded by immobilization in plaster for two or three  
months to permit fibrous fixation of the fragments.

M.D. BY GROSS MORGAN M.D.

Speed J S and McCoy H B. Fractures of the  
Humeri. 1 Condyles in Children. J B & J  
S 1933 903

On the basis of approximately 120 fractures of the  
humeral condyles in children the authors report in  
detail the results they have obtained in (1) incom-  
plete fracture of the condyles without displacement  
(2) complete fracture of the condyles with displace-  
ment which was treated by closed reduction and  
(3) complete fracture of the condyles with displace-  
ment which was treated by immediate or delayed  
open operation. They call attention to the difference  
in the prognosis and treatment of condylar and  
supracondylar fractures in children. It being more  
difficult to obtain satisfactory results in the former  
than in the latter.

In their cases of incomplete fracture of the condyle  
without displacement the results were uniformly  
good whereas in their cases of complete fracture  
with displacement which were treated by closed  
reduction the converse was true. Even though in  
the second type the detached and markedly displaced  
condyle is reduced satisfactorily subsequent dis-  
placements of greater or less extent are liable to  
occur. Much valuable time is lost by delaying open  
operation and fixing the reduced fragments by means  
of a nail. The authors believe that if the fracture is  
seen several months after the injury with only  
moderate displacement and with the fragments  
united in a reasonably good position it should be left  
alone if it is not united or is in malposition the  
results may be improved by open operation but in  
cases of this type subsequent epiphyseal changes are  
common.

The authors discuss the operations for persistent  
pain and instability serious impairment of move-  
ment and delayed union. In conclusion they  
state that poor results in cases of fracture of the  
condyles of the humerus in children are much more  
frequent than is realized by the average surgeon  
treating fractures. Closed reductions are at best un-  
certain and non-union and malunion can be pre-  
vented only by accurate reduction and maintenance  
of close apposition of the fractured surfaces. De-  
layed open reductions may be of some benefit but  
are followed almost uniformly by epiphyseal dis-  
turbances. Accordingly the authors urge immediate  
open reduction with the use of a wire nail to hold the  
reduced fragments and removal of the nail after  
three weeks under local anesthesia.

PAGE C. COLO. M.D.



# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Walters W and Priestley J T Surgery of the  
Inferior Vena Cava Am S C 1934 xix 167

There are few definite indications for operation on the inferior vena cava. During the course of right nephrectomy this vessel may be opened either intentionally for the purpose of removing a papillary projection of a renal neoplasm or unintentionally during mobilization of a densely adherent kidney. The methods of dealing with tears or incisions in the vena cava are considered. Experimental observations on healing in the wall of the vena cava following suture are reported. The possibilities for future investigation in operations on the vena cava are mentioned. Four illustrative clinical cases in which the vena cava was opened are reported.

Kemel R and Sgaltzer M The Therapeutic  
Results of Arteriography in the Extremities  
(Die theapeutische Ergebnisse der Arteriographie  
an den Extremitäten) Jst H J An 933  
u 1017

Demel and Sgaltzer call attention to their previous publications in which they reported the findings in a large number of cases in which arteriography of the peripheral vessels was done with a 40 per cent solution of uroselectan or a 20 per cent solution of a brodil. In the cases of arteriosclerosis and endarteritis obliterans with associated peripheral angiospasm the pain was relieved at once and in some of them there was immediate improvement such that the patient became able to walk around for hours without pain and to work. Moreover capillary microscopies had again become normal. However the results reported at that time had been under observation only a few months (the number of cases was small and it could not be stated definitely whether amputation of the extremity could be prevented or even delayed by arteriography).

Schweiller has also occasionally called attention to a therapeutic effect of arteriography similar to that observed by the authors. It is of the opinion that the effect is not the same as that of sympathectomy but due chiefly to an osmotic stimulation by the concentrated salt solution in the tissues. The authors suggest that the mechanical effect of the distention of the vessels may also play a role.

In this article Demel and Sgaltzer report on observations continued over a period of years in sixty-two cases in which arteriography was performed. In forty-one cases no therapeutic effect was apparent. These included eighteen cases of arteriosclerosis in which in spite of the injection of the contrast medium amputation became necessary later sixteen

cases of endarteritis obliterans in which with the exception of two cases amputation was done later three cases of diabetic gangrene in two of which amputation was done and two cases of peripheral embolism and aneurism. After subtraction of the cases of embolism and aneurism there remain fifty-eight cases of blood vessel disease in which arteriography was done. In twenty-one (36.2 per cent) of the total number a distinctly favorable change in the patient's condition frequently lasting for years was noted. Re examination was done in fifteen cases. The latter included three cases of arteriosclerosis two cases of endarteritis obliterans three cases of uncomplicated vascular spasm and one case of endarteritis obliterans with spasm. Some of them were cases in which a recurrence of pain was stopped immediately by a second injection. It is noteworthy that in nearly all of them the disease of the vessels was advanced.

The most marked changes in the vessels which were visible in the roentgenogram were found as a rule in the middle portion of the femoral artery or a handbreadth above the knee joint, a portion of the femoral artery which lies in the adductor canal. In one case cessation of the vascular spasm occurred during the arteriographic examination so that in a second roentgenogram made soon after the first the shadow of the previously abnormal vessel appeared normal.

Recently the authors have been using the entirely harmless subcutaneous injection of eupavrin according to Isl a method in order to determine during the arteriographic examination the extent to which the roentgenologically visible changes in the blood vessels are caused by an organic process and the extent to which they are due to spasm. In one case there appeared at the site of the injection a reddening of the skin the size of the palm of the hand which was similar to that of beginning gangrene of the skin. However this disappeared. In an earlier case even demarcation of such a skin area occurred in a case of endarteritis obliterans of the arm the injection was followed by skin gangrene.

The favorable effect of arteriography was manifested immediately after the injection. The extremity became warmer and defects due to loss of skin which had been healing slowly began to heal more rapidly. Gangrenous portions were demarcated more quickly. The patient became able to walk. However in spite of these characteristic changes there was never any change in the palpability of the arterial pulse. A vessel which could not be felt before the arteriographic examination could not be felt after the examination even when the findings were otherwise favorable.





# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Miami A Postoperative Complications Pallor  
and Hyperthermia in Pediatric Surgery (Con  
tributo alla con scienza di la compicaz one post  
operatoria) Palleo pertermia nella chirurgia n  
fantile) P L I w Rome 933 xl 2 chr 5 6

The first case of pallor hyperthermia and sudden  
death following surgery on the infant was reported  
by Texer and Levesque in 1914. Since then this  
syndrome although rare has been encountered fre  
quently enough to command the attention of sur  
geons and pediatricians throughout the world.

The author reports seven cases in which the syn  
drome followed an operation for hernia or  
congenital dislocation of the hip. The pallor and the  
elevation of the temperature to 39.40 41 or even 43  
degrees C usually occurred simultaneously four six  
or twenty four hours (seldom later) after  
operation and death was always sudden and un  
expected.

At autopsy no pathological changes could be  
demonstrated in any of the organs of the body in  
cluding the endocrine glands and lymphoid tissues.  
Death has been attributed to many diverse factors  
such as anesthesia nervous shock and bulbar  
shock but none of these was found responsible  
in the author's cases.

Until the etiological factors are more clearly under  
stood all efforts should be directed toward pre  
vention of the following factors: (1) careful phys cal  
examination before operation (2) reduction to the  
minimum of external factors capable of exciting the  
infant (3) the preservation of body heat (4) the  
prevention of excessive loss of body fluids during and  
after operation (5) gentle handling of the viscera  
(6) the conservation of blood whenever possible and  
(7) the administration of fluids by nasal or rectal  
tube immediately after operation.

GEORGE C FINOLA M D

King D S Postoperative Pulmonary Complica  
tions The Part Played by the Anesthesia as  
Shown by a Two Year Study at the Massa  
chusetts General Hospital Amer J of 933  
xu 43

King reports a study of the postoperative pul  
monary complications occurring in the general  
surgical service which includes gynecology at the  
Massachusetts General Hospital during the years  
1930 and 1931. Cases of proved pulmonary embol  
ism exacerbations of pulmonary tuberculosis and  
empyema were excluded.  
When pulmonary complications were carefully  
watched for they were found to occur very fre

quently after abdominal operations particularly  
operations on the upper abdomen and seldom after  
operations of other types.

Their incidence was greater in males than in  
females. They occurred much more frequently after  
intestinal operations and operations for perforated  
ulcer or septic appendix than after simple gastro  
enterostomy and appendectomy.

Definitely more complications appeared in women  
following drainage of the appendix than after opera  
tions on the gall bladder.  
Pre existing respiratory infection and the season  
of the year were found to be factors of minor  
importance.

Pulmonary complications developed after all types  
of anesthesia. They were slightly more frequent  
after spinal anesthesia than after ether anesthesia  
and more common after local than after spinal  
anesthesia. The number of cases in which nitrous  
oxide oxygen and avertin were used was too small  
to warrant definite conclusions. The relatively high  
incidence of these complications after spinal anes  
thesia was some what influenced by the fact that the  
cases in this group included a slightly greater  
number of poor general risks. However in this group  
severe pulmonary complications were fewer.

Cases operated upon under local anesthesia  
showed the greatest number of these complications  
but this group also contained a higher proportion  
of poor risks. More of the complications in this  
group were classified as severe than in the groups in  
which ether or spinal anesthesia was used.

These facts show that the anesthetic pe e is not  
responsible for the pulmonary complications.  
The use of carbon dioxide inhalation to increase  
the depth of respiration has been disappointing.  
The general condition of the patient rather than  
the type of anesthesia is the most  
important factor in the development of postopera  
tive conditions in the chest.

Abdominal operations interfere markedly with  
respiration so that bronchial secretions are retained  
instead of being expelled. Another important factor  
is the definite increase in the amount of bronch al  
secretion after such operations regardless of the  
type of anesthetic. The explanation of this fact is  
not clear.

The problem of the cause and prevention of post  
operative pulmonary complications has not as yet  
been satisfactorily solved. However it is known  
that among the preventive factors of importance are  
care to limit trauma to the minimum during opera  
tion skillful administration of the anesthetic and  
careful postoperative nursing with frequent chang  
ing of the patient's position.

MARY E. MATTHEWS M D



initial dose of 3 c cm. of a 25 per cent solution followed by a gradual increase in the amount to 6 or 7 c cm. in twenty four hours. Spinal injections should not be given to children under ten years of age. In the cases of children between ten and twenty years old the initial dose should be 2 c cm. of a 25 per cent solution. This procedure is of advantage because the smallest doses give a certain and sustained effect. A possible respiratory paralysis is not continued sufficiently long. The intraspinal administration of magnesium may be combined advantageously with the intravenous injection of larger doses of serum.

In conclusion the author discusses the use of sedatives and local anesthetics particularly avertin.

Krymov A. Latent Gas Bacillus Infection (Z. Frage der latenten Gasinfektion). 1933 xxviii 300.

As the result of the extensive experience gained during the World War it became known that gas bacilli are capable of remaining in a latent state both in the deep tissues and on the surface of the body. They require only favorable circumstances to flare up and multiply rapidly. According to the literature their average period of latency is about one year.

The author reports a case in which the gas bacilli persisted for a period of fifteen years in the leg of a man thirty eight years old who was wounded during the World War. Gas infection developed during an operation for pseudarthrosis (bone suture and free bone transplantation) and terminated fatally after a few days. Bacteriological examination of the pus revealed Gram positive diplococci and perfringens bacilli.

To answer the question as to how one may guard against the development of latent gas bacilli the author reports the case of a man fifty-one years old whose left arm was amputated following a gunshot wound with the development of gas-bacillus infection. Eight months after the operation the anaerobes were discovered in the wound secretion (pus) of the humeral stump in association with osteomyelitis of the stump. Intramuscular injections of anti-gangrene serum (10 c cm. of serum and 100 c cm. of physiological salt solution and seven days later 15 c cm. of serum and physiological salt solution) were made. Following this treatment the Gram positive diplococci and perfringens bacilli disappeared but the ordinary pyogenic cocci remained. Exarticulation of the humerus was followed by recovery.

The author concludes that when an ordinary suppurative infection persists after a gas phlegmon with a favorable course the wound secretion should be examined for anaerobes and that prophylactic injections of anti gangrene serum should be made after every operation for gunshot wound.

G. Altov (Z.)

Galli R. The Bactriophage in the Ambulatory Treatment of Localized Inflammatory Processes (Il batteri fago nella cura ambulatoria delle lesioni ginecologiche localizzate). In: Id. di K. 1933 24.

The practical application of the bacteriophage principle is about ten years old. Favorable and brilliant results have been reported. However the brevity of reports in the Italian literature suggests that in Italy bacteriophage treatment has not received very wide attention. Only Messandini and Dona (in 1924) and Iacetto (in 1931) have attempted extensive laboratory and clinical observations of the effect of bacteriophage. The former working with polyvalent anti typhoid phage reported favorable results in 50 per cent of their experiments. The latter studied the problem clinically in local pyogenic infections. This seems to be the field in which the most encouraging results are obtained.

D Herelle believed that the phage is a living ultra-microscopic virus which works intracellularly, killing and lysing the bacteria and multiplying at their expense. This theory has not yet been disproved. Some bacteriologists attribute the effect of the phage to an enzymatic action occurring outside of or within the bacteria and possibly initiated and increased by the active principle. Others think that it is due to a change in the colloidal suspension of the bacterial culture.

The size of the bacteriophage particle has been estimated at 1/30 000 of a micron. Centrifuging at 12 000 revolutions per minute will carry it down. It resists higher temperatures than bacteria. Certain antiseptics are able to inactivate it. Its action is inhibited by an acid reaction of the medium and even by normal saline solution but not by water. Phages are ubiquitous and may be found in any fluid which is contaminated by excreta especially by the fecal matter of convalescent patients. They are easily isolated by filtration. They vary in potency when first isolated and their potency may be increased by repeated passages. They may have the deleterious effect of stimulating the growth of bacteria which resist their lytic action. During the process of gross lysis swelling and loss of clarity of the bacteria may be observed on microscopic examination. When the lysis is complete nothing can be seen. With the lysis is complete nothing may be seen within the ultramicroscope. Small bodies of the bacteria during the process of lysis are discharged into the surrounding medium. After completion of the lysis even the ultramicroscope shows nothing.

The bacteriophage is harmless and can be given in large quantities and transmitted from person to person with the production of exogenous resistance. It may be given by mouth rectum or bladder intravenously subcutaneously or by local application. Although intravenous administration is most effective it is often followed by severe reactions. Local injections are safest. Subcutaneous injection at a site distant from the lesion is not so effective and



## INTERNATIONAL ABSTRACT OF SURGERY

proper use of these anesthetics however the anesthetist must be skilled careful and able to decide the correct dosage of the gas for the given patient

In conclusion the author says that it is now everywhere realized except perhaps in France that the induction of anesthesia should be entrusted only to specialists. It is a hopeful sign that young French surgeons are beginning to demand professional anesthetists. In time no doubt France will have its own journals devoted to anesthesia and schools for the training of anesthetists.

ELLA M. SALMONSEN  
Local and Conductive Anesthesia  
(Lokale Betäubung und Leitungsanästhesie) *Deutsche Zeitschrift für Chirurgie* 1933 cxxi 481

Since in the presence of hypersensitivity apparently harmless local anesthesia may damage the tissues the concentration and quantity of an anesthetic used should always be the minimal concentration and quantity that will meet the requirements. The injection should be made only where the swelling produced thereby will be visible as under these conditions injection into a blood vessel will be unlikely.

On the basis of the principle that the anesthesia should be limited to the regions in which it is required by the operation the author recommends for amputation of the thigh for example conduction anesthesia of the sciatic femoral obturator and femoral cutaneous nerves. The first two nerves are

exposed under local anesthesia so that 10 c cm of a 1 per cent solution of novocain may be injected directly into the nerve trunk. Ten cubic centimeters of a 1 per cent solution of novocain are then injected about the other nerves.

Conduction anesthesia is recommended also for abdominal operations. As the nerves always lie in immediate proximity to the vascular trunks they may be reached with the anesthetic fluid by injecting in the neighborhood of the vessels. The vascular anesthesia produced by injections around the appendicular artery permits painless removal of the appendix. For gastric operations injections around the division of the four accessible gastric arteries and after Haller. Taking an intussusception operation as an example the author shows that after injections about the superior mesenteric artery an extensive bowel resection may be done without causing pain. This procedure is preferable to splanchnic anesthesia as the latter gives adequate anesthesia only for operations in the upper abdomen. Spinal anesthesia induced even according to the new method of Kirschner has the disadvantage that in abdominal operations it almost always requires local supplementary anesthesia. If complete freedom from pain is desired at least twelve segments must be excluded for operations in the upper abdomen. Is this procedure associated with danger which cannot be disregarded simple local anesthesia with conduction anesthesia in the form of vascular anesthesia is preferable.

A. BRUNNER (2)



Carcinoma of the breast as a group are relatively radioresistant. The author is not impressed with the interstitial method of attack in their treatment. The diffuse duct cancers are usually radiosensitive to external irradiation. Radioresistance of breast cancers is difficult to predict accurately. Axillary disease often exhibits satisfactory regression. Many dermal and skeletal metastases yield remarkably to irradiation with relief of pain. In some cases of breast carcinoma in young women roentgen castration seems to increase radiosensitivity.

The cervix tolerates enormous doses of irradiation. The cellular anaplastic varieties of carcinoma are highly sensitive. The author believes that there is little if any relation between sensitivity and cure with the methods of treatment generally employed. There is little literature on the relationship of structure to radiosensitivity in carcinoma of the cervix of the uterus. Statistics are numerous on curability but not on sensitivity. Many of these tumors are superficial and yield to the caustic action of radium. The epidermoid carcinoma of the vagina and vulva is similar in structure to that of the cervix and tends to respond similarly. The response of myoma of the uterus is probably due to the effect of irradiation on the ovaries rather than upon the tumor cases. In only one of the author's four years the disease is showing activity. Not much is known concerning the correlation between tumor type and radiosensitivity in ovarian tumors. The diffuse embryonal carcinomata are radiosensitive often markedly so. The lower grades of papillary ovarian carcinoma yield very well to irradiation. Malignant granular cell carcinoma tends to be radioresistant.

Among the malignant tumors of the kidney the papillary and solid renal adenocarcinomata and the hypernephromata are quite radioresistant. Although Wilms' tumors are often extremely radioresistant, recurrence is almost inevitable with acquired radioresistance. Contrary to the behavior of neurogenic tumors, small cell neurocytomata of the supra renal gland are markedly sensitive.

Radiosensitivity of embryonal carcinoma of the testis is dependent upon both histological structure and anatomy. Teratomata of adult type are radioresistant. Adenocarcinoma is moderately sensitive and highly malignant and prone to form extensive and hopeless metastases. Embryonal carcinoma with lymphoid stroma is highly sensitive. The metastases of embryonal carcinoma of the testes are prone to be more sensitive than the primary tumor or lesion. In cases of tumors of the urinary bladder the results of irradiation are not encouraging. Little is definitely known as to the relation of sensitivity to structure.

Of the carcinomata of the thyroid the papillary adenocarcinoma (Grade 1) is relatively sensitive. The adenocarcinoma (Grade 2) may or may not be

relatively sensitive. The spindle cell and giant cell carcinomata are very resistant and the round cell carcinomata difficult to diagnose. The cartilaginous benign giant cell tumors of the bone regress favorably with moderate therapy. The cartilaginous of a slow process of sclerosis probably because of variation of this tumor tends to do well after irradiation. The aneurismal type is less sensitive. If a giant cell tumor has broken through its capsule the response is less satisfactory. Sclerosing osteogenic sarcoma are extremely resistant. Osteogenic chondrosarcomata may regress under massive doses but nearly always recur. Periosteal osteogenic sarcoma is resistant but not as markedly resistant as the sclerosing type. Small cell osteogenic sarcomata of the cellular telangiectatic type tend to show marked regression. Large spindle cell and giant cell telangiectatic osteolytic sarcomata tend to recur after regression. As a palliative measure irradiation is often very helpful in many resistant types. Although they tend to recur most endothelial myelomata are highly radioresistant. The various myelomata are highly radiosensitive. The various plasmocytoma are exceedingly radioresistant. Metastatic lymphosarcoma to bone and Hodgkin's disease in bone tend to be sensitive. Liposarcoma of the bone is moderately to markedly radiosensitive. The xanthomatous tumors lead to heal after irradiation.

Neurogenic sarcoma, neurofibroma, schwannoma, peripheral glioma and perineural fibrosarcoma are very apt to be radioresistant although certain rapidly growing tumors called neurogenic sarcomata have shown marked sensitivity. The so-called fascial sarcomata are resistant. Irradiation being usually unsatisfactory.

Liposarcoma, contrary to other soft tissue sarcomata, is moderately to markedly radioresistant. Melanomata are almost uniformly highly radioresistant about a per cent showing some degree of sensitivity. Many varieties of angiomata occur which vary in the sensitivity. Lymphangiomata are highly resistant.

Basal cell epitheliomata are relatively radioresistant except when adenoid features are present. Previous insufficient irradiation increases the resistance of the tumor and decreases that of the lymphoma group including lymphoma, lymphosarcoma, lymphogranuloma and leukemia. Thymoma are frequently diagnosed roentgenographically and often regress under irradiation so are difficult to verify at autopsy.

Tumors of the brain as a group exhibit little radiosensitivity. Astrocytomata and medulloblastomata probably are benefited most by irradiation. Certain types of pituitary tumors are somewhat radiosensitive. Information with regard to the behavior of orbital and bulbar tumors is scant. Neuroepithelioma of the retina and retinoblastoma have shown some regression but recur as a rule. Cures





# MISCELLANEOUS

## CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Marx J. The Effect of Carbon Dioxide Inhalation on the Coagulation of the Blood (Die Wirkung der Kohlensäure-Einatmung auf die Blutgerinnung). *Ort's Zeit* 1933 p 728

Various investigators have emphasized the accelerating effect of carbon dioxide inhalations on the coagulation of the blood. In cases of parenchymatous hemorrhages which are difficult to stop (cholæmia uræmia) mucous membrane hemorrhages (bladder nasopharyngeal space) and postoperative hemorrhages (diabetic carbuncle gonorrhea) preparations horse serum parathyroid extract) in addition to the usual tamponades. The action of these auxiliary substances is undetermined. In the practical use of carbon dioxide it is possible to obtain a teleohæmostyptic action simply by inhalation in contrast to the hitherto customary injections and the intravenous injections advised.

The first series of experiments reported by the author were carried out on guinea pigs to determine the effect of carbon dioxide on the bleeding time and clotting time. Following incision of the ears and cardiac puncture carbon dioxide up to 5 volumes per cent was carefully introduced from above into the containers in which the animals were placed. In the second series of experiments ten patients who were about to be subjected to herniotomy were studied with respect to changes in the bleeding and clotting time after the inhalation of carbon dioxide by means of the Vitafer apparatus the first aid apparatus ordinarily used in the treatment of asphyxia resulting from poisoning drowning or hanging.

In normal persons the clotting time was diminished by 33 per cent and the bleeding time by 70 per cent after a five minute period of carbon dioxide inhalation. After a fifteen minute period the clotting time was diminished by 25.6 per cent and the bleeding time by 30.8 per cent. A quarter of an hour after the inhalation the thrombocyte count was increased by 27.7 per cent. Practically these findings indicate that after a single inhalation as well as after inhalations lasting for four or five minutes and repeated at intervals of from twenty to thirty minutes a cessation of parenchymatous as well as of capillary hemorrhages may be expected.

The advantages of carbon dioxide inhalation are summarized as follows:  
1. It makes the inconvenient and by many considered as dangerous intravenous injection unnecessary (inaccessible veins the possibility of paravenous injection and thrombosis of the vein).

2. As a preparatory measure before operation the inhalation can be entrusted to a nurse.

3. The action of the carbon dioxide inhalation appears more rapid than that of medicaments hitherto employed to hasten blood clotting.

In undesirable effect has never been observed at any time. At the clinic of Bakay in Budapest carbon dioxide inhalations have been used for years to aerate the lungs at the end of anesthesia.

In spite of its advantages carbon dioxide inhalation cannot be employed indiscriminately in all cases. In cases of heart disease and cases of high blood pressure it is contra indicated.

The author recommends the use of carbon dioxide inhalations in cases of parenchymatous hemorrhages and as a prophylactic measure from ten to fifteen minutes before operations which will probably be accompanied by considerable parenchymatous hemorrhage.

EXTRACTUM LILÆ (2)

Teneff S and Musso E. The Hæmoglobin Level and the Function of the Liver in Surgical Dissection (Il ricambio emoglobinico e la funzione salutare epatica nella dissezione chirurgica). *Rivista di Chirurgia* 1933 11

Teneff and Musso report observations they made on the hæmoglobin level in (1) various surgical conditions (2) the postoperative period following operations of varying severity and (3) following various types of anesthesia.

In one case of tuberculosis of the knee three cases of gastroduodenal ulcer one case of postoperative adhesions following gastro-enterostomy for gastric ulcer three cases of appendicitis and one case of inguinal hernia a definite increase in the elimination of urobilin was found. In the one case of cholelithiasis there was no change. The authors believe that the increase was due to a certain degree of hepatic insufficiency and possibly also to individual variations in the elimination of the hæmoglobin derivatives.

In the postoperative group of cases studied an attempt was made to find a relationship between the hæmoglobin and hepatic insufficiency. It has been shown clinically experimentally and histologically that chronic infections especially appendicitis complicated by colitis may seriously impair liver function and that alcohol errors in diet constipation and various constitutional factors may tend to suppress an already lowered hepatic function to a varying degree. A decrease of liver function may be latent or well compensated, as shown by the fact that in the pre-operative period of observation the excretion of bile may be normal but post



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most of them cyanophile and some of them acid resistant. Later these fine granulations disappeared almost entirely and were replaced by cocci and coffee bean shaped diplococci. These in turn gave place to a network of finely branched mycelial fibers in the meshes of which there were still some diplococci. These were succeeded by slender bacilli which were distinctly acid fast and very similar to young cultures of tubercle bacilli. Just as the authors thought they were about to obtain pure cultures of acid fast bacilli the bacilli disappeared again and the whole cycle began over again. Now after seven or eight months the granules appeared again and the whole cycle began over again. Now after seven or eight months the cultures seem to have become stabilized in the form of granules and diplococci intensely acid fast in a cyanophile mycelial reticulum.

The lesions produced by these various stages of the virus varied from purely inflammatory lesions for the granular forms to a tuberculosis with cold abscesses for the bacillary forms. The histological pictures showed epithelioid cells giant cells and caseous degeneration.

The authors are therefore convinced that malignant granulomatosis is an atypical tuberculosis produced by an ultravirus. The polymorphism of the infectious agent and its cyclical evolution explain the variability and complexity of the histological picture of malignant granulomatosis. It is true that the inflammation and bacillosis produced by the filtrable virus differ clinically and anatomically from malignant granulomatosis but the same treponema produces chancre and general paralysis.

The article contains colored photomicrographs showing the different forms of the virus.

ANDREW GOSS MORGAN MD

Howes E L Briggs H Shea R and Harvey S C.  
The Effect of Complete and Partial Starvation  
on the Rate of Fibroplasia in the Healing  
Wound. *A S J* 1933 21: 846

The effects of complete and partial starvation on the healing of wounds are of fundamental importance to the surgeon but in the clinic it is not always possible to establish the exact nature of the nutrition or to tell whether prolongation of the healing time of a surgical wound is the result of malnutrition alone or of other causes.

The authors report an experimental investigation which they carried out on rats with incised wounds in the stomach to dissociate complete and partial starvation from malnutrition of other types and to study their effects on healing wounds. To a certain extent the strength of the wound was found to be directly proportional to the degree of healing attained. Therefore the authors used as their criterion of the rate of repair.

Theoretically according to the findings of previous experimentation starvation should not delay the healing of a wound but actually there are disturbing factors in association with complete or partial starvation which cause wounds to show not an acceleration of healing but a slow rate of repair.

Therefore the common belief that complete or partial starvation delays the healing of wounds may be correct as regeneration is only one phase of healing. The rats studied by the authors were divided into groups of adult rats and groups of young rats which were completely or partially starved before and after wounding of the stomach.

It is as found that in adult rats the rate of return of healing strength in wounds of the stomach was not appreciably affected by complete starvation. Neither was it affected when one half the required amount of an adequate diet was given over a short period of time.

In the young rats the effect of complete and partial starvation on the healing of wounds was quite different. With complete starvation life was not maintained long enough for satisfactory determination of the breaking strength of the healing wounds. With partial starvation healing progressed at the usual rate until the fifth day and then became definitely slower.

The retardation of the healing of wounds in the stomachs of young rats on restricted diets may possibly be explained by a reduction either separately or in combination of certain elements of the diet. These elements are probably the vitamins especially in combination with deficiency of proteins and salts. The study reported demonstrated conclusively the remarkable ability of wounds of the stomachs of adult animals to heal in spite of great anorexia and the amount of food consumed. This ability explains the clinical success of various postoperative dietary regimens which differ in the time when the feeding is begun and the amounts of food given.

ELIA M SALM NGSEN

Montgomery A H and Wolman J J.  
Sacrococcygeal Chordoma in Child.  
*P Child* 1933 21: 63

The authors review 103 cases of chordoma collected from the current literature. Fifty eight of the tumors had a sacrococcygeal location. The average age at which the patients came under observation was forty nine and ten tenth years. One case of sacrococcygeal chordoma in a child was found in the literature but the authors have observed and reported in detail the cases of 13 young children with such tumors.

In order to understand and recognize these tumors a knowledge of their embryonic origin is necessary. The term "chordoma" in present usage is restricted to the malignant form of the tumor and is not applied to the innocuous small nodules that may be found in the floor of the skull. Chordomas are sometimes referred to as chordoblastomata or chordocarcinomata and chordomal gland. A chordoma may be confused grossly with a myxosarcoma or a chondroma but its microscopic appearance is characteristic. The typical cell is large irregular and epithelioid with a foamy or vacuolated nucleus and a foamy or vacuolated cytoplasm. The tumor is large vesicular nucleus. Macroscopically the tumor



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son's disease. It is concerned with appetite and nutrition the ingestion digestion and assimilation of food energy transformation and assimilation culatory efficiency and the processes of oxygenation and hydration in the body.

Another substance in the cortex of the adrenal is hexuronic acid an isomer of glycuronic acid. In the opinion of Szent Gyorgyi who isolated it this is identical with Vitamin C. Its concerned essentially with phenol color reactions and perhaps also with and may possibly play a rôle in pigmentation.

The adrenal gland particularly the cortex is concerned in some way with the development and function of the gonads. This is evidenced by sex changes observed particularly in patients with cortical tumors. By some notably Manner the suprarenal gland is believed to be involved extensively in exophthalmic goiter.

Hemorrhage in the adrenal in the newborn is usually fatal.

Tumors of the cortex of the suprarenal in the lead to congenital pseudohermaphroditism in the infant to pubertas præcox and in the adult to virilism and hirsutism.

The treatment of cortical tumors is surgical. If removal of the tumor is undertaken prior to the development of metastases it may result in permanent cure and complete disappearance of all abnormal clinical manifestations.

Treatment of the gland by deep roentgen ray or radium irradiation when operation is contra indicated because of metastasis or some other reason may prove helpful temporarily.

Medullary tumors are of three varieties (1) neuroblastomata (2) ganglioneuromata and (3) paragangliomata. The neuroblastomata run a rapid and fatal course and metastasize freely particularly to the scalp skull and vertebrae. Ganglioneuromata are benign and occur usually before the twentieth year of age. Paragangliomata are made up of chromaffin cells.

The treatment of these tumors is surgical. The clinical syndrome of exhaustion chronic fatigue emaciation a low basal metabolism a low blood pressure and loss of libido and potentia is frequently diagnosed as hypo adrenalism or hypoadrenia.

In 1855 in describing the disease to which his name was given Addison said "The leading and characteristic features of the morbid state to which I would direct attention are anemia a general languor and debility a remarkable feebleness of the heart's action irritability of the stomach and a peculiar change of color of the skin occurring in connection with the diseased condition of the suprarenal capsule."

The remote cause of this disease from the practical point of view is tuberculosis of the gland in 80 to 90 per cent of the cases and atrophy of unexplained origin in 10 to 20 per cent. The disease is rare. It is most frequent between the ages of thirty and fifty years and twice as common in males as in females.

It usually passes through three stages. The first stage is generally characterized by unexplained weakness and exhaustion after an infection of the upper respiratory tract. The second stage that of the typical clinical syndrome is easily diagnosed. In the third stage collapse occurs with nausea vomiting dehydration and toxæmia.

The onset is usually insidious but occasionally acute. The most prominent symptoms and signs in their usual order of appearance are (1) asthenia and fatigue (2) pigmentation of the skin and mucous membranes (3) anorexia nausea and vomiting (4) loss of weight (5) arterial hypotension (6) dizziness and syncopal attacks and (7) dehydration and circulatory failure.

Addison's disease usually pursues a downward course with remissions and with acute exacerbations which often attain the severity of a crisis. The shortest duration on record was eighteen days but about a dozen patients have survived ten years. As a rule the diagnosis can be made on the basis of progressive asthenia gastro-intestinal irritability pigmentation of the skin and mucous membranes feeble heart action and low blood pressure particularly when these occur in a patient who has or has had tuberculosis.

The treatment of Addison's disease is undergoing a radical change. The important considerations are (1) general care of the patient (2) substitution therapy with cortical hormone (3) the prevention or management of dehydration and (4) treatment of the underlying tuberculous.

The aqueous soluble cortical hormone of the adrenal gland isolated by Swingle and Pfaffner controls the clinical manifestations of adrenal insufficiency immediately in the vast majority of cases if it is given in adequate amounts and at proper intervals. The most potent preparation contains approximately 36 dog units per cubic centimeter an amount representing the hormonal content of approximately 30 gm of fresh adrenal glands. Of this preparation 2 to 5 c.c. given daily intravenously or subcutaneously should suffice. Eschschin the commercial product available is somewhat less potent and should be given intravenously in amounts of from 5 to 10 c.c. daily.

The prognosis of Addison's disease is extremely grave. It is largely the prognosis of tuberculosis. The most important single clinical prognostic index is the body weight only those who eat and gain recover.

J. THORNTON WITHERSPOON M.D.

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t m s D u e t ( E s o p h g e a l D s e a s  
H I N D S E N I C H S E N S P p t t U l c e r o f t h e E s o p h a g u s  
I A C E R I G T S E N R E x p e r i m e n t a l I n t g a t n s n  
S u t u f t h e E s o p h a g s A f t R e s e c t n  
I C I A R F R C n d A R A G O J L P a r o y m a l  
T a c h y p n e a o f D e c u b t u m T u b c u l u A d  
n m d t u m t

## SURGERY OF THE ABDOMEN

## Abdominal Wall and Peritoneum

- M A L K I N F H O V E E L C O L R G R A S R V  
W I T T E W C and I L Y N C G D p l u n f  
A b d m n a l W a l l s A S y m p o s i u m

## Gastro-Intestinal Tract

- R I E R S A B C h i c n d r t u n f t h E t l s y  
o f P p t U l  
A B E L A L A c t y l h l i n u n P h y c H u  
M A R T I N O T T G T h f t h g e n e s a d C h c o  
n t g n l g a l S y m p m t l g y f D l i c h o  
c l n  
P A T T E R S O N D C A p p d E p p l x a n d T h  
S g a l y g n i f a n w t h R p t f t h e  
C s e s  
C U N D E L M n d M A Y R F S t a t t i n d f  
q u c y f A p p n d i c t  
D E G R E O R I O E C n t r i b u t i n T w n t y O  
C a s e s o f R t a l S t n s i s T h  
S y p h i l m a f f u r n r  
L A D D W E and G a o R F C g n t a l M l  
f r m a t i f t h A n u s n d R e c t u m

## Liver Gall Bladder Pancreas and Spleen

- S C H I A S B C a l c u l i f t h G a l l B l a d d e  
L A U V E R S E T h S u p e a l t m n t f C n c e f  
t h A m p u l l a f t

## Uterus

## GYNECOLOGY

- P F H I L E A G E n d V A T I N E J H I r r a d i a t  
t h T m e t f f B m y o m a f t h U t e r u s

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- R U B O V I T S W H a d K O B A V J F l u e s n  
T u b a l S t e r i l i z a t i o n ( M a d )  
C O R N E L I M O S I N G E R M I B E R T R and H A R  
V E Y R H i t g n a t C l S c a t n o f T u b a l  
E p t h m a t  
M E D N I C K P J a d K A N T E R A E T h c a C e l l  
T u m s f t h e O a y  
K A I D I N H O T h e S t u s o f G n l o s a C a i n o  
m a t a o f t h e O r y f r m t h C l n c a l f f s t l g l  
a n d R a d i o l g e a l S t a d p m t s

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D U A O M G T h I f l u  
C t e S b t a n c s n t h O g a n and T s s u e f  
t h L s c P l a s l x p r m e t a l S t u d y  
M A Z E A C n d K A T Z B R C h c a l L a l a t i n  
f C o m b i n d P l a n and A n t n P l u t a r y  
T h p y  
S A M E A S T h S r u m D a g n i s f G n r h o r  
t h e f m l  
V I D A K O I C S T h G n o c c u s C m p l m n t R e a  
t n n C y n e c l o g i c a l I n f m m t r y D s e a s  
L E O G O b s e a t n s I a a t u m n C y l g y

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t m s i t h D g n s f E x t a U t n P g  
n y V R w f N n e t y C s e s  
F I L E N T C H E A R I t g t n f t h P r p h y t i n  
C n t n d H m A m n i u f l d  
S L O A Z A N D H n d H F R I C O V I C P l a n t a l  
T a s m i s n f G o o c I n f t n t t h  
f t u  
B O S C H U T T M \ R a y D g n o s f I n t a U t n  
D a t h f t h F e t u s  
D I F C A M A N N W J a d W e \ x C R T h B l o o d  
v l u m e s  
B M P F J T h L a b y S g f l L l a m p t i  
T o a m a t h S p e c i a l R f t t l O d  
f t h A p p n d T h I n t r r i t

## Labor and Its Complications

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WARD V R O E c t ry U g phy  
C ABANTER H and LOBO-ONELL C Eluminat n  
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# INTERNATIONAL ABSTRACT OF SURGERY

MAY, 1934

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

Roques, P Three Cases of Submaxillary Lithiasis  
(Trois observations de lithiase sous maxillaire)  
*Bull et mem Soc nat de chir*, 1933, lxx, 1386

The cases of submaxillary lithiasis reported by Roques were those of three men thirty-two, thirty-five and thirty-three years of age

In the first case the patient was admitted to the hospital because of a painless tumor in the left submaxillary region On its removal under local anesthesia, the mass was found to be a very hard gland, but the calculus was not discovered at that time A month later the calculus was removed through an incision in the floor of the mouth

In the second and third cases the calculus was found on roentgen examination It was removed in the third case, but not in the second In the third case there was a superimposed acute infection

Following a discussion of these cases the technique of demonstrating calculi in Wharton's duct by X-ray examination is described MARSH W POOLE, M D

### EYE

Gifford, S R, and Barth, E E Visual Sensation  
Produced by Roentgen and Radium Rays *Arch Ophth*, 1934, xi, 81

The authors review the literature and their own investigations on visual sensation produced by roentgen and radium rays and draw the following conclusions

1 The roentgen and radium rays are visible to the dark-adapted eye

2 There is a difference in their visibility in that the roentgen rays may be localized accurately and small radiopaque objects may be recognized in their light The radium rays produce only a vague luminous sensation which cannot be correctly localized

3 Examination of vision by means of roentgen rays gives some information as to the function of the peripheral retina in persons with opaque media

However, it does not aid in judging macular function, and in certain patients the results are unreliable

4 Especially if the lenses are clear, care must be taken to avoid injury to the eyes, and not more than from 10 to 15 ma of current should be employed for a period of not more than three minutes In patients with cataract this amount may be exceeded

5 It seems probable that the sensation produced by roentgen rays is due to a direct photochemical effect on the rods  
LESLIE L MCCOY, M D

Gonin, J The Evolution of Ideas Concerning  
Retinal Detachment Within the Last Five  
Years *Br J Ophth*, 1933, xvii, 726

The following five factors are considered by Gonin to be of special importance in a general consideration of retinal detachment

1 The frequency of holes or tears detected in the detached retina The more experienced the observer the higher the percentage of tears found Patience and intensive study may be necessary to discover the tear, especially if it is very small, quite peripheral, or concealed behind vitreous or lenticular opacities Many ophthalmologists have reported finding the tear in as high as 90 per cent of their cases of retinal detachment

2 The presence of holes or tears in the beginning, and extension of the detachment Although all observers have admitted the frequent occurrence of a hole, some have maintained that the hole is the result rather than the cause of the detachment This view the author believes is untenable on both theoretical and practical grounds The rents are found more often in recent than in old detachments and may be seen even before separation of the retina and choroid has occurred On the other hand, retinal detachments in cases of choroidal tumor and due to subretinal fluid, as in pregnancy, are usually unaccompanied by a tear The author's demonstration that the sealing of the hole by the cautery causes permanent re-attachment is cited as final proof that the tear is the cause of the detachment

## INTERNATIONAL ABSTRACT OF SURGERY

<sup>3</sup> The cause and mechanism of the formation of holes in the vitreous probably plays an important rôle in the production of the detachment chiefly through a shrinking process. While the presence of one or more holes is necessary for loose detachment previous or subsequent alterations of the body allow these holes to become the starting point of progressive detachment. Because of staining difficulties vitreous changes are difficult to demonstrate. An atrophic hole in the retina due to myopia or a traumatic hole will not result in high separation unless the vitreous change occurs.

<sup>4</sup> The conditions of successful treatment based on release of the subretinal fluid and eighty techniques for the production of adhesions between retina and choroid had been tried. Although good results were obtained in some cases and poor results in others the reason for success or failure was never known. Closure of the tear is essential to the success of operation and the tear should be incorporated directly or indirectly in the scar. When this is impossible as in large dissections a barrier or line of adhesions must be produced to prevent advancement toward the center of the retina.

<sup>5</sup> The best way to meet the requirements of successful treatment. The Paquein cautery was the first means used by the author to seal the holes. It produces larger areas of cicatrization than the galvano cautery and as a rule yields the desired result with fewer punctures. Secondary tears reported after the use of the thermocautery are probably due to improper technique. The author has not observed them. Disadvantages of the method include the risk of hemorrhage into the vitreous at the time of operation or later and the difficulty or impossibility of making more than one or two punctures at the same sitting, thus necessitating two or three operations in cases of very large holes and those in which the localization has been uncertain. In cases of the latter type chemical cauterization with potassium series of trephine holes have been made has some advantage but it is a very long and tedious operation without uniformly good results. During the past three years there have been introduced various methods for sealing the retinal tear by utilizing the coagulating power of the high frequency current of a ball shaped electrode or by means of needle electrodes made to penetrate through the sclera to the choroid and retina. The author believes that it is still too early for final judgment of these methods. He states that each case should be studied individually and treated by the method best adapted to its needs. Exact localization of the tear is essential in any method. WILLIAM A. MANN, JR. M.D.

the retina in cases of retinal separation. Leber claims that this fluid has the same characteristics as the vitreous whereas others insist that its albuminous character proves it to be an exudate.

Subretinal fluid obtained at operation for retinal detachment was examined by the author in a series of cases. Relatively large amounts of albumin were found. In general the quantity was less in recent cases than in those of long standing but there seems to be no exact rule governing this relationship. A high albumin content was usually accompanied by a yellowish tinge. In some cases the albumin content was greater than that of blood serum. The xanthic tinge was probably due to old hemorrhages or a leakage of blood. The amount of dextrose varied widely and was relatively small when the glycolytic function of the retina was preserved. Therefore the percentage of sugar may be considered an index of the functional state of the retina and permits a prognosis with regard to retinal function after surgical intervention. The amount of chlorides was found to be variable and to bear no relationship to the amount of albumin.

In chemical composition the retinal fluid resembles an exudate but the fact that at times it may contain more albumin and more sugar than the blood serum indicates that it is not a simple exudate. Pathological findings show that the high content of solids is due to the products of cell disintegration. The author believes that the fluid has its origin in the retina and not in the choroid (which is usually normal) and not in the vitreous as contended by Gonnin.

WILLIAM A. MANN, JR. M.D.

#### Knapp, A. Operative Treatment of Retinal Detachment with Electrocoagulation. I. *Ophth* 1933, 7: 733

After a year's experience in the treatment of retinal detachment by ignipuncture according to the method of Gonnin and another year's experience in its treatment by the trephination and cauterization method of Gust and Lindner, Knapp reports the results in twelve cases operated upon during the past year by the newer diathermy method. The disadvantages of the method are chiefly the limited applicability of the method, loss of vitreous destruction of retinal tissue and late hemorrhage. The phnation followed by cauterization with potassium hydroxide has proved less dangerous but is extremely tedious and difficult procedure and associated with the possibility of choroidal perforation and intraocular hemorrhage. The diathermy method advocated by W. E. Larsson and Safar, which has for its purpose the production of an adhesive basis for shutting off the retinal tear, is a very popular.

Of the twelve patients treated by the author by the diathermy method eight recovered completely. Several had been operated upon previously by the Gust method. In the diathermy treatment the Safar electrodes were used. In the author's opinion

Maglitot, A. The Subretinal Fluid in Idiopathic Detachment of the Retina. *Am Ophth* 1934, 31: 59

The author has a difference of opinion as to the origin of the fluid beneath or between the layers of

the diathermy method is the most successful method for the treatment of retinal detachment yet devised. As in all methods, preliminary study for exact localization of the tear is essential. When this is impossible, the only treatment is coagulation of a large area in the region where the detachment began. Under such circumstances the prognosis is always questionable. During the course of the operation the fundus may be inspected.

In conclusion the author emphasizes that the diathermy operation is a symptomatic operation, and much remains to be learned regarding the pathology and pathogenesis of retinal detachment.

WILLIAM A. MANN, JR., M.D.

### EAR

Ruskin, S. L. The Venous Circulation of the Petrous Bone and Its Clinical Significance. *Ann Otol, Rhinol & Laryngol*, 1933, *liii*, 961.

The author states that the venous pathways of the temporal bone play a leading role in the dissemination of infection from the tympanic cavity and the causation of intracranial complications. Early extension of involvement of the venous system can be recognized clinically and should serve as a guide for early accurate intervention. The Gradenigo syndrome should be considered a sign of venous engorgement of the group of tympanic veins emptying into the inferior petrosal sinus. The syndrome of temporomaxillary orbital pain, trismus, and edema of the lower lid is of similar significance with the Gradenigo syndrome, but represents venous engorgement of the veins of the tympanic cavity draining anteriorly into the pterygoid plexus and middle meningeal vein.

Early incision of the drum membrane and the induction of free bleeding from the middle ear afford relief from the symptoms and may prevent suppuration of the petrous pyramid. However, it will not relieve advanced involvement of the petrosa with suppuration and bone coalescence.

In conclusion the author emphasizes that the orbital and trigeminal symptoms may be induced by mechanisms affecting the pterygoid and middle meningeal venous systems other than of petrosal origin, and must be carefully differentiated in order that unwarranted surgical invasion of the petrous bone may be avoided. JAMES C. BRASWELL, M.D.

### NOSES AND SINUSES

Watkins, A. B. K. Notes on Nasal Plastic Surgery. *J Laryngol & Otol*, 1933, *xlviii*, 809.

Watkins calls attention to the fact that fracture of the nasal bones is nearly always a bilateral fracture with rotation of both nasal bones around their vertical axes in the same direction. The treatment consists in simply rotating the nasal bones back to their original position. It is important to maintain this position during healing as there is a tendency for the deformity to recur. In discussing internal

and external pressure splints the author describes his modification of Carter's splint and shows it in an illustration.

In making implants for the correction of saddle nose, Watkins uses autogenous rib grafts. He claims that they neither grow nor atrophy even if left mobile in subcutaneous tissue. Ordinary bone grafts are quite unsuitable because bone, unless fixed at one or both ends, undergoes atrophy. The author emphasizes the necessity for a columellar graft in addition to the dorsal implant to insure a good result.

He describes the dermo-epidermic suture which he uses to reproduce the normal groove between the cheek and nose in repair in the alar region. The sutures are inserted so that the epidermis of the cheek is in contact with the deeper layers of the dermis of the ala.

When large areas in the region of the nose must be excised, simple suture of the defect may produce considerable deformity and asymmetry. To correct these sequelae it is necessary to use ingenuity in mapping out sliding flaps from the edge of the defect. The author shows his procedure by means of drawings and photographs.

Massive defects must be repaired by pedicled tube grafts. Grafts from the neck cause trouble because of weight and traction. The author therefore uses tube grafts from the cheek and replaces the resulting cheek defect by an immediate Wolfe graft applied with the use of a pressure splint.

JAMES C. BRASWELL, M.D.

Seydell, E. M. Fibro-Epithelial Tumors of the Nose (Papillomata) and Their Relationship to Carcinoma. *Ann Otol, Rhinol & Laryngol*, 1933, *liii*, 1081.

Fibro-epithelial tumors of the nose are rare. In a review of the literature up to 1929 the reports of only sixty cases were found. The author believes it possible that the tumors are often mistaken for polypi or other benign growths or for carcinoma and therefore are not reported properly.

Fibro-epithelial growths arise as solitary or multiple tumors varying in size, form, and consistency. They occur most commonly in the vestibule of the nose on the anterior portion of the septum. They may arise in the posterior or superior portions of the nasal cavities, especially from the middle turbinate and ethmoid regions. Very rarely they occur as primary growths in the paranasal sinuses. They are composed of both epithelium and vascular connective tissue. The supporting tissue is sharply demarcated from the epithelium covering it. The cause of these tumors is not definitely known. The neoplasms resemble ordinary polypi except that they are a deeper red and of firmer consistency. In some instances they appear as a series of deep folds in the mucous membrane, while in others they appear as cauliflower growths.

The symptoms are rarely severe. Nasal breathing may gradually become impaired. Secondary sinus

## INTERNATIONAL ABSTRACT OF SURGERY

Infection occurs when nasal obstruction is present. Nasal hemorrhages are infrequent. Broadening of the root of the nose due to distention or destruction of the nasal bone has been reported.

A diagnosis of nasal papillomata cannot be made on the basis of the macroscopic appearance of the tumors. The neoplasms may resemble ordinary polypi very closely. Slow growth and absence of symptoms and metastases suggest that the tumor is benign but cannot be relied upon as a diagnostic criterion. In cases of typical fibro-epithelial tumors and those in which frank malignancy is present there should not be much difficulty in making a diagnosis by biopsy.

When not interfered with by fibro-epithelial tumors, slowly increase in size. Some develop into large tumors while others spread over a considerable portion of the nostril without forming a large tumor mass. Destruction of tissue and bone has been frequently observed and in a number of cases the paranasal sinuses have invaded one of the sinuses. Thus the dura may be laid bare with resulting meningitis. The prognosis is more favorable if the tumor is solitary and if it is located in the anterior half of the nose. When the tumor is removed with a snare or punch they usually recur frequently within a few months and the secondary growth often attains a large size. In certain small lesions in which lymphatic involvement of the neck usually occurs quite late and in early lesions of the cheek, palate or gums an application of radium or a wedge shaped excision may be sufficient but in the more extensive lesions wide excision of the primary tumor and block dissection of the neck are indicated. If the lesion is definitely unilateral a unilateral neck dissection is sufficient but if the lesion is situated in the median line bilateral dissection should be done.

In cases of multiple tumors removal of all pathological tissue to the bone or cartilage should be done and followed by x-ray or radium therapy. If the sinuses are involved external radical sinus surgery is indicated. In the atypical or questionable cases it is advisable to destroy the tumor by diathermy followed by x-ray or radium irradiation.

M. NICKEL C. LICHTENSTEIN & M. D. MOUTH

Duhamel M. P. Nasal Tumor Treated Early by Thermocauterization and Antiseptic Surgery. The tumor was removed by the use of the cautery and the wound was treated with antiseptic. The patient recovered well.

The case reported is that of an infant six months old. The condition followed trauma of the upper gum margin which occurred when the infant's mother applied a lump of sugar at the site of eruption of a tooth. It was characterized by high fever, marked prostration and an area of gangrene in the affected region as soon as the entire diseased area began to slough. A sponge soaked with anti-gangrene serum was then introduced into the wound and re-

placed daily for a few days and subcutaneous injections of the serum in doses of 5 c.c.m. were given for a number of days. Eventually the infant made a good recovery with very little residual deformity. The author emphasizes the fact that the infant was not apt to recur in poorly nourished children in the mouth. The primary lesion was a localized area of the mouth. The patient was treated with antiseptic and the wound was kept clean. The patient recovered well.

Fig. 1. Cancer of the Mouth. The patient was treated with antiseptic and the wound was kept clean. The patient recovered well.

In discussing various plans of treatment of cancer of the mouth, the author emphasizes that no one method is applicable to all cases.

Since invasion of the neck nodes by carcinoma should be to remove the lymphatic drainage area together with the primary lesion unless this is contraindicated or the primary lesion is in the very early stages and of a low grade of malignancy.

In certain small lesions in which lymphatic involvement of the neck usually occurs quite late and in early lesions of the cheek, palate or gums an application of radium or a wedge shaped excision may be sufficient but in the more extensive lesions wide excision of the primary tumor and block dissection of the neck are indicated. If the lesion is definitely unilateral a unilateral neck dissection is sufficient but if the lesion is situated in the median line bilateral dissection should be done.

In cases of cancer of the tongue and the floor of the mouth it is best to proceed more radically and the rules for removal of the lymphatics are the same as in the treatment of cancer elsewhere. Regarding the type of treatment of a primary lesion the lymph nodes of the neck should be removed on both sides. At the first operation the author usually performs a block dissection and ligates the lingual artery on the affected side. As soon as the wound has healed he operates on the other side and then he removes the mouth lesion. He merely removes the mouth lesion with the electrosurgical knife and defers the block dissection on the other side to a later date. He states that bilateral neck dissection in one sitting is a severe strain on the patient and should be done only in well selected cases.

JAMES BARRETT BROWN M.D.

Lund C. C. Second Primary Cancer in Cases of Cancer of the Buccal Mucosa. A Mathematical Study of Susceptibility to Cancer.

Lund cites the conclusion drawn recently by Warren and Gates in a study of autopsy material that a independent cancers in the same patient are found about 4 times as often as can be accounted for by chance. This incidence is the gross incidence based on all types and locations of cancer. Lund made a similar study but approached the problem

from the clinical point of view and limited his investigation to one variety of carcinoma.

Statistical evidence in a series of 1,548 cases of buccal carcinoma indicated that the development of a second carcinoma of the mouth is about 15 times as common as it would be if chance were the only factor.

It showed also that the development of cancer of some other organ is about twice as common as it is in the population of the same age and sex.

The author suggests that the ratio between the increased tendency to new cancer in general and the much greater increased tendency to new local cancer may indicate the relative importance between general factors, such as heredity, and local factors, such as irritation, in the causation of buccal cancer.

In conclusion he says that the frequent occurrence of second cancers must be kept in mind because when a second cancer is given proper treatment the prognosis with regard to this lesion is as good as that of the first cancer and much better than that of recurrences.

JAMES BIRKETT BROWN, M.D.

Wardill, W. L. M. Cleft Palate. *Brit J Surg*, 1933, xvi, 347.

The author gives a brief description of the mechanism of speech, stressing the importance of the muscles which are brought into play and Passavant's cushion. He then describes the operation of pharyngoplasty which has for its object the construction of an artificial but exaggerated cushion of Passavant on the posterior pharyngeal wall. This is accomplished under intratracheal nitrous oxide oxygen and ether anesthesia. On the postpharyngeal wall a transverse incision passing through the superior constrictor muscle is made and sutured in a vertical direction. At the same sitting the palate is repaired if the patient's condition is satisfactory. This is accomplished by raising mucoperiosteal flaps through lateral incisions in the palate close to the alveolar margin. The hamular process is completely divided on each side and the soft palate separated from the posterior edges of the hard palate. The edges of the cleft are pared and sutured together. The nasal mucous membrane is sutured with fine catgut, but for the undersurface of the soft palate and mucoperiosteum of the hard palate fine silkworm sutures are used.

In seventy-two cases operated upon by the author there were three deaths, a mortality of 4.1 per cent. The deaths were due, not to inherent defects in the operation, but to avoidable accidents.

In a consideration of the results of the operation there are two criteria of success: first, restoration of the palatopharyngeal valve, and second, restoration of normal speech. Several simple tests to determine the existence of a competent palatopharyngeal valve are described. Of the fifty-five patients traced by the author, nineteen had a competent palatopharyngeal valve and therefore the functional physiological mechanism of normal speech, thirteen were able to

speech without any cleft-palate stigma, six had neither normal speech nor a physiologically competent valve, and seventeen were too young to test or were operated upon too recently for judgment of their speech.

The prognosis after operation depends largely upon the age at which the operation is done. The best results may be expected when the operation is performed during infancy. When the operation is done after the stage at which speech has been acquired the prognosis takes on an entirely different aspect. Acuity of hearing, a certain amount of intelligence, and above all, ambition, are necessary for complete success.

Proper speech training is of great importance, but there must be close cooperation between the surgeon and the trainer. When the operation is completed after speech has begun, the training is much more complicated. Although speech training will cause marked improvement, it will never produce perfect speech. The type of cleft present has no influence on the type of speech adopted.

A large number of patients who have had the palate repaired lack a functional valve and therefore have poor speech. Pharyngoplasty performed on such patients is capable of restoring a valvular mechanism and in the right type of case causes marked improvement in speech. The palate may be lengthened by paring the free edges of the posterior pillars of the fauces and suturing in the midline. In certain cases this procedure results in considerable improvement.

WILLIAM G. HANW, M.D.

Casella, E. Contribution to the Study of Palatine Fissures and Harchip (Contribucion al estudio de las fisuras palatinas y labio leporino). *Rev. méd. Fat. Im*, 1933, vii, 119.

The author reviews in considerable detail the embryology, anatomy, and physiology of the palate. Factors present during fetal life result in failure of fusion of the maxillary process with the nasofrontal process which causes a cleft. Faulty fusion of any other component of the superior maxilla may also result in a fissure (microstomia, facial coloboma). Photographs from Veau's work are shown to illustrate varying degrees of harchip and cleft palate.

Treatment should be given early as the condition interferes with nursing, mastication, deglutition, and phonation. It may be surgical or prosthetic or both. Speech training is important. The author reports the findings of his study of the psychic effects of the deformities on his patients.

The article contains drawings and photographs of patients and museum specimens. Among them is the picture of the skull of a three-year old calf with a wide cleft palate. There is a bibliography of thirty references.

T. W. STEVENSON, JR., M.D.

Hall, I. S. Progressive Ulcerative Reticulososis of the Palate. *J. Laryngol. & Otol*, 1934, xlv, 35.

The author reports a peculiar type of ulceration of the palate which progressed to a fatal termination.

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The patient, as a woman thirty two years old the mother of six healthy children. Her illness began with a sore throat eight weeks before her admission to the hospital. Soon thereafter she noticed a small swelling on the hard palate. Later this softened and became ulcerated.

On examination a perforation of the hard palate was discovered. A three weeks course of anti syphilitic treatment which was given although the Wassermann reaction was persistently negative resulted in no improvement. The ulcer had no definite characteristics and was not accompanied by enlargement of the lymph nodes. Unne examination was negative and there appeared to be no visceral disease. Examination of the blood showed a leucocyte count and slight secondary morphonuclear pnia with a persistently high polymorphonuclear opsy disclosed no evidence of carcinoma or tuberculosis and failed to yield the criteria of a new growth. Radiotherapy was without beneficial effect. The ulcer enlarged progressively and erythematous pain less shortly before death small bullae and nodules with necrotic centers which involved the whole thickness of the skin and on bursting evacuated a few drops of serous fluid appeared on the skin of the thorax and in the groin.

Postmortem examination showed in addition to the local and cutaneous lesions observed clinically a septic leptomenigitis due to extension through the right cribiform lamina pulmonary congestion and edema and several small white firm nodules in the pulmonary parenchyma and the renal cortex. Histological examination of the epidermis and of the nodules in the kidneys and lungs showed infiltration by cells of a primitive type in which there were numerous mitotic figures. As there was no evidence of lymph node involvement the dissemination probably occurred by way of the blood stream.

Thirteen cases collected from the literature are reviewed.

The cause of the ulceration is unknown. The condition is not familial and does not follow trauma. It begins as a localized swelling usually on the roof of the mouth. Later there is a progressive ulceration with perforation of the palate and destruction of the septum and the conchal and nasal boundaries. Pain is unusual.

Only rarely is the progress of the ulceration checked even temporarily. The duration of life varies from four months to two years. All drug therapy has proved inefficacious. The only treatment that seems to be of any value is deep X-ray or radium irradiation.

Dr. A. D. Palatoplasty Using Extra Oral Tissue  
Su. A. S. 934

Flaps from the forehead pharyngeal flap flaps from the arm similar to those used in Italian rhinoplasty transplanted fingers nasolabial flaps and flaps from the neck and chest have been used to close palatal defects. The methods are subjected to criticism by those who advocate prostheses or use closure by intra oral tissue. The method of choice should produce a velum flexible enough to permit free movement and long enough to allow closure of the oropharynx by the dorsum of the tongue should provide a nasal as well as an oral epithelialized surface and should not produce deformity.

The author reports a case in which a tubed pedicle flap was used with considerable success. The tube was raised on the left side of the abdomen and after a time attached to the thenar eminence of the left hand the arm being held in plaster. Next the tube was released from the abdomen and attached to the freshened anterior edge of the defect. Three weeks later the hand was liberated and the stump of the tube attached to the posterior border of the defect. At this stage a Brophy resectoscope and nasal feed ing were used. Fat was then removed from one side and the graft attached. Later a similar procedure was done on the other side. The various steps in the operation are shown by eighteen photographs.

THOMAS W. STEVENSON M.D.

NECK  
Lazarus J. A. and Rosenthal A. A. Late at Ab  
rant Thyroid Glands A. S. 1933

In 1906 Shrager defined an aberrant thyroid as a mass of tissue with the structure of a normal or pathological thyroid gland which is situated at some distance from the normal gland and has no connection with it.

The origin of lateral aberrant thyroids is still a moot question. The most plausible theory seems to be that advanced by Grosse who maintains that these structures develop from clusters of cells arising from the posterior aspect of the fifth branchial pouch. Seventy per cent of aberrant thyroids give rise to neoplasms of the papillary type. The other lesions are papillary adenocarcinoma, epithelioma, alveolar carcinoma and carcinoma. The tumor usually grows slowly and is subject to hemorrhage and calcification. It usually has a well defined capsule. Although these tumors are found most frequently in the neck they may also be in the bones, pleura, pericardium and ovaries.

Lateral aberrant thyroids must be differentiated from (1) carotid body tumors (2) tuberculous glands (3) branchial cysts (4) Hodgkin's disease (5) secondary or metastatic carcinoma (6) lymphoma (7) lymphatic leukemia and (8) syphilitic glands.

In cases in which complete extirpation is indicated the prognosis is good. If the growth not removed may undergo malignant changes. Complete extirpation of the aberrant tissue should be attempted as incomplete removal is often followed by recurrence. Operative procedures are difficult because of the close proximity of the tumor to important vascular and nerve trunks. The capsule

should be included in the extirpation. Following operation, X-ray treatment should be given in all cases  
HOWARD A. MCKNIGHT, M D

Cohen, M H Leg Ulcers Due to Thyroid Dysfunction *J Am M Ass*, 1934, CII, 283

A case of deep ulcerations of the lower extremities associated with myxœdema is reported. The administration of thyroid extract quickly healed ulcers that had persisted unchanged for six years.

The cutaneous changes in thyroid diseases are not well understood. A relationship between circumscribed myxœdema of the legs and leg ulcers of obscure etiology is suggested. SAMUEL KAHN, M D

Brazier, M A B, and Grant, F M The Relation of the Impedance-Angle Test for Thyrotoxicosis to Changes in the Basal Metabolism *Lancet*, 1934, CCXXVI, 125

It has already been shown that the impedance angle is unaffected by the ingestion of food, exercise, or menstruation.

In agreement with previous observations, the basal metabolic rate was found by the authors to be increased in the normal person by ephedrin, pilocarpin, thyroid extract, and thyroxin, but not by atropin or iodine. Of these drugs, only thyroid extract and thyroxin have an effect on the impedance angle. The authors therefore conclude that a change in the impedance angle is specific to a thyroid factor and is not affected by chemical stimulation of the autonomic system reacting on the basal metabolic rate. SAMUEL KAHN, M D

Wallace, H L, and Wevill, L B Toxic Goiter: An Analysis of the Results of Surgical Treatment. *Edinburgh M J*, 1933, XI, 598

This is a statistical analysis of 285 cases of toxic goiter treated by thyroidectomy at the Royal Infirmary, Edinburgh, in the period from 1922 to 1932. Follow-up information was not obtained in 34.

There were 6 female patients to 1 male patient. The histological diagnosis was primary toxic or exophthalmic goiter in 146 cases and secondary toxic goiter in 117 cases. The primary toxic goiter was most frequent in the twenty-ninth year of age and the secondary toxic goiter in the fortieth year of age. In both sexes and both types of goiter the duration of the symptoms ranged from thirty-five to fifty months. The severity of the symptoms was not radically different in the 2 types of goiter.

Subtotal thyroidectomy was done in 172 cases, lobectomy in 65, and removal of an adenoma in 21. In 21, miscellaneous operations were performed.

Of the 187 patients followed up, about 75 per cent are now in good health and able to perform their usual duties. In 48 per cent of 125 cases the exophthalmos completely disappeared. Only 3 patients showed evidence of myxœdema. Three others showed symptoms of parathyroid tetany.

Of the 285 patients, 35 (12.3 per cent) died as the direct result of operation. PAUL STARR, M D

Schreiner, B F, and Murphy, W T Malignant Neoplasms of the Thyroid Gland. *Ann Surg*, 1934, XCIV, 116

During a period of twenty years forty-two cases of malignant neoplasm of the thyroid gland have been recorded at the New York State Institute for the Study of Malignant Disease. These constituted 0.37 per cent of all cases of malignancy recorded during that period. Coller, Clute, De Courcy, Balfour, Speese and Brown, and Simpson are quoted as giving the incidence of malignancy in cases of thyroidectomy at from 1.2 to 4 per cent.

The average age incidence in the forty-two cases reviewed by the authors was fifty-two and six-tenths years. One patient was in the third decade, six were in the fourth, eight were in the fifth, nine were in the sixth, seven were in the seventh, ten were in the eighth, and one was in the ninth. The pathology of the tumors is discussed.

In all of the forty-two cases there was a history of previous thyroid enlargement. The duration of this enlargement ranged from one month to forty years and averaged four and ninety-seven hundredths years. In the cases of eighteen patients with far advanced malignancy biopsy was not done. Of fourteen of these who were treated by roentgen irradiation alone, eleven died within a year and two within two years. Of three who were treated by radium irradiation alone, two died within a few months and one is still living after four years. One patient who was treated by both roentgen and radium irradiation died in a few months, and one treated by roentgen irradiation is living at the end of one year. Eighteen patients had been operated upon radically before their admission. Of these, twelve were treated by roentgen irradiation alone, four by radium irradiation alone, and two by both roentgen and radium irradiation. Of the twelve treated by roentgen irradiation alone, two are alive after from one to two years, one is still living after four years, and one died after two years from cerebral hemorrhage. Of the remaining nine, seven died from the thyroid malignancy in less than a year and two after from three to four years.

In the authors' experience, malignancy of the thyroid is rare and usually fatal. The only curative procedure is early operation followed by irradiation. When clinical diagnosis of the condition is possible the case is usually hopeless and irradiation is only palliative. PAUL STARR, M D

Smith, L W, Pool, E H, and Olcott, C T Malignant Disease of the Thyroid Gland: A Clinicopathological Analysis of Fifty-Four Cases of Thyroid Malignancy. *Am J Cancer*, 1934, XX, 1

The authors report a study of 42 cases of thyroid malignancy treated at the New York Hospital in the past thirteen years, during which period there were approximately 100,000 admissions and 855 thyroid specimens were examined. They studied also 12 specimens of thyroid malignancy from other sources. The ages of the patients ranged from twenty-two to

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sixty nine years and averaged forty eight and eight tenths years. Forty one of the fifty four patients were women. The previous existence of an adenoma was recognized as the essential factor in the development of the malignancy in 92.6 per cent of the cases.

The tumors were of the following types: papillary adenocarcinoma, fetal adenocarcinoma, epidermoid carcinoma, giant cell carcinoma, small round cell carcinoma and sarcoma. Each type is discussed in detail and shown by photomicrographs.

A correct diagnosis is made before operation in only a small percentage of the cases as there are no clinical symptoms suggesting the nature of the tumor. The prognosis is definitely unfavorable. In the authors' opinion irradiation is the treatment of choice. Surgery is of little avail after the tumor has invaded the capsule of the adenoma or the parenchyma.

M HERBERT BARKER M.D.  
J. L. Surg. & Otol. 1934 11:5

The author discusses the syndromes of Collet Sicard, Jackson, Vernet, Schmidt, Asell's, Tapia and Vernet and points out the fallacy of each. He contends that the classification should be based on

the situation of the malady. He suggests the following classification.

A Syndrome of the bulbar nerves. Paralysis of the vagus accessory of central and extra medullary origin connected with those of neighboring nerves.

B The syndrome of the jugular foramen, thus named by Vernet. This includes only peripheral cases inside and outside the skull. It is a defined malady with a definite diagnostic significance. Not all three nerves need be completely paralyzed. Not the contrary every affection in or near the jugular foramen belongs to this group.

C The syndrome of the parapharyngeal space. This is characterized by paralysis in the province of ninth, tenth and twelfth cranial nerves and the sympathetic nerve. It is a low vagus paralysis the situation of the malady being lower in the neck than in the syndrome of the jugular foramen. As a rule the eleventh cranial nerve and the palate are not involved. In some cases even the vagus may be unaffected.

D The vocal cord diaphragm syndrome. This is a rare simultaneous paralysis due to the comparative proximity of the nerves involved.

NORMAN C. BULLOCK M.D.



# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS, CRANIAL NERVES

Bykov, K. The Functional Relationship of the Cerebral Cortex to the Internal Organs (Funktioneller Zusammenhang der Hirnrinde mit den inneren Organen) *Veshch. Chir.*, 1932, LVIII, 12

The author reviews experiments carried out in Pavlov's school during recent years in a study of the conditioned reflexes of individual organs and of functions depending on many organs such, for example, as the function of the consumption of oxygen. From these studies three main problems arise (1) the determination of the possibility of the development of conditioned reflexes affecting the kidneys, liver, and spleen and thereby explaining the relationship of these organs to the cortex of the brain, (2) the determination of the possibility of the development, on a function, of conditioned reflexes having their origin in irritations taking effect in the internal organs, and (3) the demonstration of the internal mechanism of the conditioned reflex activity of the internal organs or general functions such, for instance, as oxidation.

With regard to the first problem, the author states that he, Alevejev, and Berchmann have been able to show that when, in the case of a dog whose ureters have been brought to the surface of the body, the introduction of water into the stomach or rectum is followed by diuresis and this experiment is repeated from eight to fifteen times, the diuresis will occur later without the administration of water if the dog is again placed under the same conditions. They found also that if a certain sound is made at the time the water is introduced at first, the diuresis will be produced later merely by this sound without the introduction of water. This conditioned reflex occurs according to the law which was previously determined to govern the reflex of the flow of saliva. It gradually weakens unless it is stimulated from time to time by the unconditioned reflex (the introduction of water), and it is inhibited by other unusual reflexes.

In the solution of the second problem the liver was selected as the "effector" organ, that is, the organ showing the effect (Ivanov). In a dog with a gall-bladder fistula, the flow of bile was considerably increased by the introduction of a  $\frac{1}{4}$  per cent solution of hydrochloric acid into the stomach. Later, the same result was obtained by the simulated introduction of hydrochloric acid. The effect was slighter but sufficiently pronounced to demonstrate an influence of the cerebral cortex on the secretion of bile by the liver. In experiments carried out by Rickl, a similar flow of bile was produced by the introduc-

tion of sodium taurocholate or glychocholate into the blood stream. The stimulant used to excite the conditioned reflexes was the preparation for the injections or a certain sound. In investigations of the spleen, the author, working with Gorškov, made use of the subcutaneous displacement of the spleen. To produce an unconditioned reflex on the movements of the smooth musculature, a weak electrical stimulation of the lower extremities, just enough to cause pain, was used. If this was associated with a whistle, the whistle alone was sufficient later to cause the movements of the spleen.

Gas metabolism was studied by Olnjanskaja. The basal metabolism was determined in a human subject. The man then performed muscular work for two minutes, a metronome being set in action beside him. After from six to fifteen of such sittings the beats of the metronome without muscular work were sufficient to drive the basal metabolism up to 100 per cent. Other findings showed that the conditioned reflex caused increased oxidation in the tissues, especially in the muscle tissue. Therefore a trophic action of the nervous system was proved.

In attempting to solve the second problem, the author with Ivanov conducted the following experiments.

With careful exclusion of all "extraceptive" stimulations, that is, stimulations perceptible to the sense organs, water was introduced through a gastric fistula into the stomach of a dog which had been subjected to gastrostomy. This caused a diuresis which could be measured as the urine was discharged from the ureters which had been made to open externally. A simulated introduction of water was then carried out, that is, the water introduced through the gastrostomy was withdrawn completely after a few minutes. In spite of this withdrawal, diuresis occurred again and followed a curve similar in all respects to that observed when the water was allowed to remain in the stomach. Therefore the stimulation of the gastric mucous membrane had a conditioned reflex action on the renal secretion. The author terms such a stimulation "intraceptive." He reports also experiments demonstrating the existence of "muscle receptors," "glandular receptors," and especially "organ receptors."

All organs are supplied not only with centrifugal fibers through which they receive stimulation to activity from the nerve centers, but also centripetal connections along which they inform these centers of the status of their work.

To the question whether every organ has its own localized, narrowly circumscribed centers in the brain or not, the author answers that there are no such centers. He believes that the cerebral cortex effects temporary connections between the various



cells with very little cytoplasm and no granulations, and chromophile cells with a highly developed cytoplasm and many granulations. The latter are divided into basophile and eosinophile cells. Accordingly, there are chromophobe and chromophile adenomata and various secondary and intermediate groups.

There are also two forms of chromophobe adenomata—those with an intensely vacularized trabecular structure and those with an alveolar structure made up of smaller cells with a lymphoid appearance resembling the principal cells of the normal hypophysis.

Three groups of mixed adenomata are recognized those with cells resembling chromophile cells but with few or no acidophile granules, those with cells of the chromophobe type but containing distinctly acidophile granules at the periphery of the cytoplasmic body, and those with cells of a chromophobe type containing granules slightly stained by eosin.

There is also a group with fetal cells, found particularly in the lateral part of the anterior lobe. The fetal cells are cylindrical cells with a dark cytoplasm arranged in bands and representing vestiges of the embryonic hypophysis.

Still another group of tumors are those made up of pregnancy cells which resemble the hyperplastic cells of the hypophysis seen in pregnancy.

Secondary lesions are quite frequently found in cases of adenoma of the hypophysis. They may be so extensive as to obliterate the tumor structure. The most common are hemorrhagic foci, but there may be also foci of necrosis consisting of a pulpy mass containing crystals of fatty acids or cholesterol. One case of cystic degeneration has been reported.

It is generally believed that chromophile adenomata are the most frequent, but among the authors' forty-one cases there were thirty-two of chromophobe adenoma, twenty with clear cells, five with pregnancy cells, one of the fetal type, and one of an indeterminate type. There were two chromophile eosinophile adenomata, one basophile chromophile adenoma, and six adenomata of the intermediate or mixed type. It is possible that the predominance of the chromophobe form in surgical cases is due to the fact that this type of adenoma generally grows to a large size. Statistics showing a predominance of chromophile tumors were those of anatomists who found the tumors at autopsy, the tumors were generally small.

It is very difficult to differentiate between benign and malignant tumors of the hypophysis histologically. Some malignant tumors show a distinctly epitheliomatous structure with cubical or cylindrical cells not in the least resembling that of adenomata, but some do not show any histological evidences of malignancy, in analogy to other tumors of endocrine glands, the typical example of which is metastatic goiter.

The article contains photomicrographs of the different types of tumors, some of which are colored.

AUDREY GOSS MORGAN, M.D.

Kornblum, K. Deformation of the Sella Turcica in Tumors of the Middle Cranial Fossa. *Am J Roentgenol*, 1934, xxxi, 23.

The changes seen in the sella turcica in roentgenograms of the skull in cases of brain tumors are classified by the author according to the location of the tumor as follows: (1) intrasellar, (2) extrasellar, (a) suprasellar, (b) parasellar, (c) metasellar, and (3) sphenoidal bone. Kornblum discusses chiefly the changes in the sella produced by the parasellar tumors, those immediately adjacent to the sella in the middle fossa. These changes are found chiefly in the dorsum sellae, which shows considerable erosion while the posterior clinoids, although sometimes indistinct, are preserved. In some cases the floor of the sella is eroded. Less frequently, the anterior clinoids are also affected.

LEO M. DAWIDOFF, M.D.

Stevenson, I., and Echlin, F. The Nature and Origin of Some Tumors of the Cerebellum. *Medulloblastoma*. *Arch Neurol & Psychiat*, 1934, xxxi, 93.

The authors describe six tumors confined to the cerebellum which they believe arose from the granular layers. They think that the term "neuroblastomata" is more suitable for such tumors than the term "medulloblastomata," but because of the origin of the neoplasms they suggest calling them "granuloblastomata."

The article contains illustrations showing the variation in position of the granular layer at different ages. The granular layer at first appears on the outer surface of the leaflets and later migrates inward to the position it occupies in adult life. The outer granular layer is composed of round undifferentiated cells without processes which later become elongated as they reach the final internal granular layer. Such undifferentiated cells associated with mitotic figures and rapidly changing both their shape and position might easily be supposed to give rise to tumors.

In the first case reported, sections showed tumor cells apparently growing from the outer surface of the leaflets and separating them. In other parts of the cerebellum there appeared to be remnants of an external granular layer. The second tumor showed a similar arrangement of tumor cells growing from the external surface of the leaflets and pushing them apart. The third tumor showed less stroma than the first two neoplasms and would ordinarily be considered a typical medulloblastoma. In several places it appeared to be growing from the outer surface of the cerebellar leaflets. At one place in the cerebellum the typical appearance of a vestigial external granular layer could be seen. The cells of the fourth tumor strongly resembled those of the granular layer of the cerebellum. The authors believe that this case was identical with the first two cases described, although no gross material was available for study. Microscopic examination of the fifth tumor showed the internal granular layer of the cerebellar leaflet to be continuous with the tumor.

## INTERNATIONAL ABSTRACT OF SURGERY

tissue. The neoplasm looked like a continuation of this granular layer. In the sixth case the tumor grew from the outer edge of the cerebellar leaflets and there was an external granular layer similar to that found in normal newborn infants.

The authors emphasize that if medulloblasts occur in the nervous system there is no good reason why they should be confined to the cerebellum or to the roof of the fourth ventricle and produce tumors practically always in the cerebellum. Furthermore the finding in medulloblastomata of a few cells which resemble either neuroblasts or spongioblasts is not sufficient evidence on which to base the theory that the cells of medulloblastomata are hypothetical and capable of producing both neuroblasts and spongioblasts. However if the tumors described in this article arise from a specific cerebellar structure this would explain more readily why they are confined so largely to the cerebellum. Their supposed origin from the external granular layer of the cerebellum would explain the finding of cells resembling neuroblasts as this layer is predominantly composed of neuroblasts. The differences seen in the normal development of the granular cells in man and the lower animals seems to warrant the assumption that the cells in the reported tumors may vary in size and staining properties and still be granule cells. The color and tendency toward rosette formation is shared by the granular layer of the cerebellum as well as by medulloblastomata.

Rostrum Zollinger W D

Ca illo R Deviation of the Aqueduct of Sylvius and the Fourth Ventricle as a Sign of Tumor of the Posterior Fossa. J Neurosurg (L) 4 v 1933 p 1033. 1 en lo tum es de l f can a p st nor yod entra ul grafia) A h g t d u l 933 x

In 1930 Carillo after using Balado's method of iodoventriculography first described the diagnostic sign of contralateral deviation of the aqueduct of Sylvius and the fourth ventricle in cases of cerebellar and cerebellopontine tumor. In this article he confirms the importance of ventriculography in cases of cerebellopontine tumor and one of tumors of the cerebellar hemisphere) which were controlled by opaque substances and epistaxis (four cases of advanced intracranial hypertension). In the stage of advanced intracranial hypertension the deviation produced by the cerebellopontine tumor was limited almost exclusively to the aqueduct leaving the fourth ventricle in situ and in the majority of cases incompletely filled. The cerebellar tumor produced a displacement involving not only the aqueduct but also the fourth ventricle and the cystic nature was completely filled. Another differential feature in cases of cerebellar tumor is unilateral occlusion of the foramen of Luschka.

These signs have the same diagnostic importance in cases of infratentorial lesions of the posterior fossa as deviations of the third and lateral ventricles in cases of tumor of the cerebral hemispheres. If the tumor is large deviation of the fourth ventricle is accompanied by blocking of the aqueduct and the signs of median and lateral hydrocephalus coexist. If the tumor is smaller the ventricular system remains permeable and a large hydrocephalus may or may not exist.

The sign of deviation of the aqueduct is of great value in cases of tumor of the cerebellopontine angle with incomplete symptoms. These tumors are frequently mistaken for cerebellar tumors and are made only with air iodoventriculograms if they are proved that bilateral hydrocephalus without other findings hitherto considered almost pathognomonic of cerebellar tumors may be caused also by tumor of the third and fourth ventricles cerebellopontine angle peduncles pons and medulla and by arachnoiditis. Moreover this method provides the medium for establishing the mechanism of lateral hydrocephalus roentgenologically. The sign of deviation of the aqueduct and fourth ventricle shows how the cause of a simple bilateral hydrocephalus as revealed by air can be demonstrated with exactness by Balado's iodoventriculography.

W E Morse W D

## SYMPATHETIC NERVES

Stewart R C The Sympathetic System and Pain Phenomena. J S T 933 x 7

The author reports conclusions drawn from certain experimental and clinical observations regarding the afferent associations of the sympathetic system. The observations were correlated with the clinical results of sympathectomy for several types of pain. Shaw summarizes his conclusions as follows:

1 The sympathetic fibers may conduct afferent stimuli subverting common sensation after the extirpation of the somatic innervation. This function appears to develop gradually after removal of the spinal nerve supply.

In certain types of intractable neuralgia are distinct from the conditions of pain which are by the spinal system.

2 The sympathetic system acts as a control on the somatic sensory thresholds and the removal of this influence is followed by a temporary increase of common sensitivity.

3 The anatomical sympathetic pathway is the cervicothoracic region which contains parasympathetic type I neuralgia pain.

4 The anatomical sympathetic pathway is the thoracic type I neuralgia pain.

5 Surgical ablation of the parasympathetic ganglia will definitely cure the sympathetic type I neuralgia through removal of the mechanism

of pain. Periaarterial sympathectomy will certainly relieve pain in similar conditions, and it is suggested that the operation produces its results by the induction of an inhibitory phase through the radiation of molecular shock throughout the sympathetic neural circuit.

ROBERT ZOLLINGER, M.D.

Lewis, D., and Geschickter, C. F. Tumors of the Sympathetic Nervous System. Neuroblastoma, Paraganglioma, Ganglioneuroma. *Arch. Surg.*, 1934, *LVIII*, 16.

The authors review tumors of the sympathetic nervous system, including 103 tumors studied in the Johns Hopkins Hospital, Baltimore.

Thirty-three of the 40 neuroblastomata reported occurred in the medulla of the suprarenal gland or the sympathetic ganglia adjacent to the medulla. About one-half of them developed in children under three years of age. The most common symptoms were fever, an abdominal mass, anæmia, and vomiting from pressure on abdominal viscera. The clinical picture of appendicitis was simulated in 5 cases. Multiple metastasis to bone occurred in 8. In the latter the clinical course was rapidly downward and in the majority death occurred within two months. Although these tumors may soften and decrease in size following roentgen-ray and radium therapy, irradiation seemed to hasten metastasis. The results of surgical therapy were unfavorable.

Fifty-two paragangliomata were studied by the authors. These are divided into 3 groups: (1) those arising from the carotid body, (2) those arising from the medulla of the suprarenal gland, and (3) the argentaffin or carcinoid tumors of the gastro-

intestinal tract. The authors have found the following factors of importance in the diagnosis of paraganglioma of the carotid body: (1) the position of the tumor at the bifurcation of the carotid artery, (2) long duration of the symptoms and slow growth, (3) an expansile pulsation, bruit, and thrill, suggestive of aneurism with absence of other changes in spite of long duration of the tumor, (4) oval shape and lateral mobility of the swelling, (5) a tendency of the growth to bulge into the pharynx without causing ulcerations of the mucous membrane, and (6) failure of the tumor to respond to irradiation.

Like the tumors of the carotid body, most of the paragangliomata of the suprarenal gland occurred in adult life. Hypertension, hypotension, and vasomotor instability were the most frequently noted clinical symptoms. Urinary symptoms may develop with deformity of the renal pelvis.

The argentaffin tumors of the gastro-intestinal tract occurred twice as frequently in the appendix as in the small intestine, but were rare in the stomach and large intestine. The majority were benign and ran a slow course. About 20 per cent of these tumors, especially those involving the small intestine, undergo malignant changes.

The authors add 8 cases of ganglioneuroma to the 103 cases previously reported. Although these tumors are usually benign and solitary, 3 of those in their cases were malignant. The symptoms are due to pressure and depend upon the location of the tumor. In 1 of the authors' cases a very small ganglioneuroma was found on the auditory nerve. Two of the malignant cases are reported in detail.

ROBERT ZOLLINGER, M.D.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

**Mattina A** A Contribution to the Etiology and Pathogenesis of Bleeding Nipple (C ntrbuto il stud etiopatogenetico della mammella sanguinante) *Rf. ital med* 1933 xlv 1772

The author reports a rather unusual case of bleeding nipple in the male. The patient was a man forty five years old who eighteen months before his admission to the clinic noticed the gradual enlargement of a small nodule in the right breast slightly above the level of the right nipple and the outflow of a few drops of a cloudy red fluid after pressure on the areola. There was no spontaneous pain but the breast was somewhat tender on pressure. The nodule became reddened painful and swollen. This condition persisted for three days at the end of which there a few drops of pus flowed from the nipple. The symptoms and masses then disappeared. The next day this later bleeding from the nipple occurred for the first time and thereafter recurred approximately every twelve to fifteen days.

Under local anesthesia the nipple region was resected. Microscopic examination revealed the presence of a subacute mastitis inflammation of the milk ducts and papilloma formation within the ducts.

Mattina reviews the literature on bleeding nipple briefly and discusses some of the theories regarding the pathogenesis and etiology of the condition. In the male bleeding from the nipple is most often associated with a malignant lesion of the breast but may be caused also by benign lesions. The phenomenon is a manifestation of many disturbances in the breast and does not constitute a clinical entity.

A. Louis Ros M.D.

## TRACHEA, LUNGS AND PLEURA

**Amberson J B J** and **Rigdon H Mc L** Lipiodol in Bronchography Its Disadvantages and Dangers *Am J R* 1933 xxx 77

After bronchography retained lipiodol is gradually discharged through the bronchi. Direct absorption through the lung occurs only to a slight degree if at all. A slight exudative reaction usually occurs about deposits of lipiodol in the healthy lung but this seems not to be harmful clinically. The transudation of edema fluid may be considerable and may account for the rapidly developing roentgenographic lobar opacity reported by some roentgenologists.

Lipiodol may be retained in the pulmonary alveoli for days months or years. The persisting

density may impair the value of serial roentgenograms as guides for treatment.

Disadvantages and dangers peculiar to the cricothyroid and transtracheal method of injection include the escape of oil into and its indefinite retention in the cervical and mediastinal tissues the possibility of infection of these tissues the bronchial discharges and pain dysphonia edema of the glottis dysphagia subcutaneous emphysema and air embolism.

Iodism is due chiefly to swallowing of the oil and the absorption of iodine through the intestine. As a rule this can be avoided by injecting the oil carefully in small amounts adopting measures to prevent retention in the lungs drainage of the bronchi after bronchography by posture and the administration of a brisk saline purge.

In cases of infectious disease mainly tuberculosis and acute or chronic suppurative conditions dissemination or aggravation may be caused by lipiodol injections. The authors record some instances of serious results and fatalities in such cases and discuss the reasons for such results. They cite also complications showing the danger of the intratracheal injection of iodized oil in cases with impairment of cardiac or respiratory function. In conclusion they describe the selection of cases for the injection of iodized oil and the technique that they have found most satisfactory.

EARL O. LATIMER, M.D.

**Pisani S** A Peculiar Mobile Area of Increased Resonance in Pneumothorax (Sopra un particolare di risonanza mobile nel p. m. t. ac) *Riv. ital. med.* 1933 xl 196

In every case of pneumothorax there is an area of increased resonance due to the presence of gas in the pleural cavity. In cases in which the pleura is free from adhesions this area may shift about according to the laws of aerodynamics so that the area invariably occupies the most elevated portion of the pleural cavity. The form of this area varies from case to case according to the local disease but with the patient in the horizontal supine position it is frequently bell shaped. The dimensions of the area of increased resonance are also extremely variable depending on the amount of gas present the distensibility and movability of the adjacent pleura and the elastic tension of the lung tissue.

Most of these facts may be demonstrated by physical examination and are easily shown by X-ray examination. Recognition of the movable area of increased resonance is of importance in the diagnosis of early limited pneumothorax and in the determination of the course of pneumothorax therapy.

A. Louis Ros M.D.

Marvin, H P The Importance of Bronchoscopy in Bronchiectasis *Ann Int Med*, 1934, vii, 903

From a review of 200 cases of bronchiectasis Marvin concludes that the diagnosis of this condition is made best by bronchoscopy supplemented by X-ray studies following the injection of lipiodol He states that bronchoscopy is also of therapeutic value Bronchoscopic aspiration has proved to be the most satisfactory method of treating cases in which a pneumonitis has developed about the bronchial dilations In such cases there is a tendency toward abscess formation because of the retained secretions In bronchiectasis with persistent uncontrolled hæmorrhage the bronchoscopic application of silver nitrate to the bleeding area has been beneficial

Two types of postural drainage apparatus are described and shown in illustrations

FRANKLIN E WALTON, M D

Warner, W P, and Graham, D Lobar Atelectasis as a Cause of Triangular Roentgen Shadows in Bronchiectasis *Arch Int Med*, 1933, lii, 888

The authors believe that triangular basal shadows seen in plain roentgenograms of the chest are diagnostic of bronchiectasis, but that the lesion should be further investigated by means of roentgenograms made with lipiodol

In experiments on dogs a similar shadow was produced when atelectasis of the basal lobe was caused by obliteration of a basal bronchus by the introduction of a tampon The authors conclude that mechanical plugging of the basal bronchi by œdema of the bronchial walls is sufficient to produce such an atelectasis with the formation of a triangular shadow

The literature is reviewed briefly

FRANKLIN E WALTON, M D

Stuhl, Camendron, and Marques Roentgen-Ray Observations in Fifty Cases of Pleural Calcification (Sur les calcifications pleurales à propos de cinquante observations radiologiques) *Arch med-chir de l'appar respir*, 1933, viii, 413

In thirty-two of the fifty cases of pleural calcification reviewed by the authors the deposits of calcium occurred after injuries (in fourteen a projectile was still present in the thorax) and were directly related to hæmothorax In twelve, they followed serofibrinous pleurisy, in two, empyema, and in three, therapeutic pneumothorax In two, the cause was not determined

In every instance the deposits were discovered by roentgen-ray examination Some of them were surprisingly extensive, covering nearly the entire pleural surface They produced a dense shadow or appeared as scattered granules Lateral roentgenograms may be necessary to determine the site of a deposit, and exploratory puncture may be required to distinguish it from pleurisy

The various shadows produced by the calcium deposits are shown by sixteen roentgenograms, and the French literature on pleural calcification is reviewed

MARSH W POOLE, M D.

## ESOPHAGUS AND MEDIASTINUM

Collins, E N Lesions of the Esophagus *Med Clin North Am*, 1934, viii, 1045

Collins reports five cases of lesions of the esophagus which either emphasize certain features in diagnosis or illustrate the rarer esophageal lesions

Case 1 was that of a man sixty-five years old who complained of a continuous grinding pain in the region of the lower sternum and the upper epigastrium and had lost 15 lb The Ewald test showed free acid 95, total acid 115 Roentgen examination revealed a filling defect at the cardiac orifice suggesting a carcinoma One month later roentgen examination in the Trendelenburg position revealed a hiatus hernia which reduced itself in all other positions Fixation of the stomach was done together with posterior gastro-enterostomy for duodenal ulcer Six months later an obstruction developed in the middle of the esophagus and an extensive carcinoma was shown by X-ray examination

Case 2 was that of a man aged sixty years who had difficulty in swallowing Examination disclosed a marked microcytic anemia and absence of free acid in the stomach Esophagoscopy and roentgen examinations revealed no abnormalities The condition improved when the anemia was treated

Case 3 was that of a man forty years old who had a chronic productive cough and dysphagia and had lost 30 lb The sputum was purulent and foul The patient was emaciated, and his temperature was about 100 degrees F Roentgen examination revealed a lung abscess with cavity formation and partial obstruction of the esophagus in the region of the clavicles Displacement of the esophagus to the right suggested a traction diverticulum The obstruction gradually became complete and gastrostomy was necessary The author states that a traction diverticulum due to an adjacent inflammatory process is unusual

Case 4 was that of a man aged fifty-four years who had lost weight and strength and had vomited frequently Roentgen examination revealed a carcinoma of the stomach obstructing the lower end of the esophagus

Case 5 was that of a man fifty-nine years old who complained of chronic cough, dysphagia, and hoarseness Roentgen examination revealed a large globular diverticulum at the lower end of the esophagus on the left side The author believes that this was a pulsion diverticulum of congenital origin

J DANIEL WILLEMS, M D

Jackson, C, and Jackson, C L Pulmonary Symptoms Due to Esophageal Disease *Arch Otolaryngol*, 1933, xviii, 731

The authors point out nine ways by which pulmonary symptoms may be produced by pathological conditions in the esophagus and hypopharynx These are the following

1 Inspiration of infected food, blood, or oral, pharyngeal, or nasal secretions which overflow into

## INTERNATIONAL ABSTRACT OF SURGERY

the larynx because they cannot pass through a stenosed oesophagus

2 Direct extension up and over the laryngeal rim of pathological processes originating in the oesophagus or hypopharyngeal wall

3 Direct extension through the tracheal wall or the wall of a bronchus into the pharynx

4 Direct extension of the oesophageal disease to the pleura or through the pleura into the parenchyma of the lung

5 Direct extension of the oesophageal lesion to the mediastinum and thence to the lung

6 Extension of the oesophageal disease by way of the blood stream or lymph channels

7 Compressive stenosis of the trachea or bronchus without pathological involvement of the tracheobronchial wall by bulky oesophageal lesions

8 Laryngeal paralysis caused by pressure upon or involvement of the recurrent laryngeal nerve by a lesion such as a carcinoma

9 Reflex symptoms especially cough excited by disease limited to the oesophagus

In some cases the pulmonary symptoms predominate over the causative oesophageal symptoms to such an extent that the latter may be entirely disregarded by both the patient and the physician

The characteristic pulmonary symptom of oesophageal disease is sudden waking with coughing, choking and strangling. The patient believes that the source of the cough is altogether laryngotracheal and does not realize that the accumulated secretions have overflowed into the larynx. This overflow and this symptom may occur in health but they are much more marked when oesophageal disease is impaired by stenosis

Flooding of the secretions in the pyriform sinus as seen in the laryngeal mirror is an important early sign of oesophageal stenosis with possibly impending pulmonary complications

In conclusion the authors state that in the search for an obscure cause of cough an examination of the oesophagus should be made with the antigen test and the oesophagoscope

LARSEN, O. LARSEN, M. D.  
HILNDE, Nilsen S. Peptic Ulcer of the Oesophagus  
(U) oesophag. d. gastr. n. H. p. Tid. 1933  
194 4 4 45

Peptic ulcer of the oesophagus is usually an isolated lesion. It occurs in the lower third of the oesophagus. It varies in size from that of a pea to a lemon measuring from 8 to 10 cm. and involving the entire circumference of the oesophagus in a girdle like fashion. Like ulcer of the duodenum but in contrast to ulcer of the stomach it occurs in men in contrast to women. The author discusses its etiology and pathogenesis in detail.

The most characteristic symptom is the pain. This is usually localized in the upper part of the

epigastrium behind the sternum and may extend to the scapulae. Vomiting, regurgitation and haematemesis are also very common. Because of the absence of typical symptoms the diagnosis and differential diagnosis may be difficult. Thoracic examination discloses a nictic filling defect. Stenosis of varying degree. The niche may be due to the use of force or folds of the mucous membrane. Above the stenosis oesophageal dilatations may occasionally be observed. A definite diagnosis may be made by oesophagoscopy.

In conservative treatment as in gastric ulcer the use of a liquid diet is to be considered. In addition conservative treatment should include the administration of alkalies in powder or liquid form and painting of the ulcer with cocaine and a 5 to 10 per cent solution of silver nitrate once or twice weekly through the oesophagoscope or the insufflation of bismuth subnitrate. Spasms require the administration of belladonna and sometimes the use of morphine. The author recommends the use of eumydrin and papaverin.

Is surgical treatment gastrostomy to exclude the ulcer comes up for consideration. The treatment of hamorrhage requires strict regulation of the diet, bed rest and symptomatic measures. In perforation the treatment indicated depends on the site of the lesion.

The operative treatment recommended for stenosis is the Rossing procedure, antethoracic anastomosis between the oesophagus and stomach by the formation of a skin tube along the first part of the sternum.

The prognosis of peptic ulcer of the oesophagus must be considered grave. Of the severely patients, seven cases are reviewed by the author only one is still alive. The chief danger is perforation which is usually fatal.

HAALAN (2)  
Ingbrigten R. Experimental Investigation of the Suture of the Oesophagus After Resection  
Tid. 1933  
194 4 4 45

The experiments reported were performed on cats. In the first five animals a resection of 1 cm. of the thoracic oesophagus was followed by a jejunal anastomosis. In the next five animals a resection of 2 cm. of the thoracic oesophagus was followed by a jejunal anastomosis. In the last five animals a resection of 3 cm. of the thoracic oesophagus was followed by a jejunal anastomosis. In all cases the animals survived and gained weight.

After these unsuccessful experiments the author employed only the finest aseptic technique. The animals were not fed by sally or infection. The first animal died 10 days after the operation. The second animal died 15 days after the operation. The third animal died 20 days after the operation. The fourth animal died 25 days after the operation. The fifth animal died 30 days after the operation.

The author concludes that the results of the experiments are not encouraging. The author recommends that the operation should not be performed unless the patient is in a very favorable condition.

HAALAN (2)  
Ingbrigten R. Experimental Investigation of the Suture of the Oesophagus After Resection  
Tid. 1933  
194 4 4 45



killed and the sites of resection subjected to microscopic study

In no animal was there any postoperative infection. One cat, which was subjected to resection between the bifurcation and the cardia one hundred and twelve days before a second operation—an œsophagogastrostomy—died of purulent pleurisy ten days after the second operation. In this case the first operation impaired the circulation to such an extent that the occurrence of healing a second time in the immediate vicinity of the resection could not have been expected. The mucous membranes showed marked varicose veins.

In all cases a continuous circular suture was made in the mucosa. Microscopic examination showed that the silk sutures in the muscular coat were not absorbed, whereas those in the mucosa were eliminated.

The resection of 5 cm. of the œsophagus of the cat, which is from 16 to 17 cm. long, is equivalent to the resection of 8 cm. of the human œsophagus, which is about 25 cm. long. The author believes that with the technique described and a circular su-

ture, 8 cm. of the human œsophagus can be resected for beginning carcinoma. KORITZINSKY (Z)

Aguirre, R. C., and Araoz, J. L. Paroxysmal Tachypnoea of Decubitus in Tuberculous Adenomediatinitis (Taquipnea paroxística de decubito por adenomediatinitis tuberculosa). *Semana med.*, 1933, 21, 1863.

The case reported was that of a girl nine years old. In the erect position there was no dyspnoea and respiration was normal, but a few seconds after the patient assumed the horizontal position a sudden severe paroxysm of tachypnoea developed and respiration reached the enormous rate of from 120 to 150 per minute. The horizontal position could be maintained for only a short time. When the erect position was again assumed the paroxysm ceased as suddenly as it began.

A diagnosis of tuberculous adenomediatinitis was made principally on the basis of the roentgen findings. The authors concluded that the horizontal position produced pressure on, and irritation of, the pneumogastric nerves. WILLIAM R. MEEKER, M.D.

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Meleney F. Howes E. L. Colp R. Grace R. V.  
 White W. C. and Heyd C. G. D. Rupture of  
 Abdominal Wounds Symposium 1934 101 5

Meleney and Howes review 55 cases of disruption of abdominal wounds with protrusion of the viscera which occurred in the Presbyterian Hospital New York in a period of eight years. The incidence of this complication in all cases of abdominal operation was about 1 per cent. Fifty of the cases were carefully analyzed. Disruption occurred most commonly in patients over forty years of age and was twice as common in males as in females. Only 14 of the 50 patients were under forty years of age. Fourteen of the cases were clean, 29 were contaminated and 8 were infected. The disruptive force was an undue activity in 14, vomiting in 38, a cough in 29, distention in 38 and hiccup in 38. The disruption occurred in an upper vertical incision in 33 cases, a middle vertical incision in 18, a lower vertical incision in 4, an upper oblique incision in 7 and an upper transverse incision in 3. Lower transverse incisions were closed by continuous sutures of plain catgut in 4 cases, sutures of silk in 3 cases, sutures of chromic catgut in 3 cases, continuous sutures of chromic catgut in 42 cases, an interrupted suture of silk in 1 case, a case of an interrupted 4 and lateral sutures with buttons or tubes in 7 cases. The operations followed by wound disruption most frequently were cholecystectomy and gastro-enterostomy. The mortality was 44 per cent. The greatest number of disruptions occurred between the 5th and the 10th day after the operation.

Disruption of the wound is due to too rapid absorption of the sutures approximating the wound edges before healing of the wound has occurred. If absorbable sutures are used absorption of the suture is favored by exudation into the wound and the presence of microorganisms. The tensile strength of sutures and the holding power of the tissues diminish progressively and rapidly during the first week after the operation. The process of repair does not begin immediately. There is always a lag period which varies in length according to the patient's condition. Under ideal conditions fibrin blasts begin to appear and lay down their fibrils after forty-eight hours. Healing begins rapidly but slows down at the end of a week or ten days. In clean cases it is usually complete after fourteen days.

Meleney and Howes believe that silk is better suture material than catgut in clean cases. Its use

is associated with less exudation and less likelihood of infection and there is little or no diminution in its tensile strength. Silk should not be used in infected or contaminated cases. The length of time that catgut sutures will resist digestion is difficult to determine. Retention sutures are apt not to hold the peritoneum and have a tendency to cut the abdominal wall. For maintenance of approximation of the peritoneum and posterior sheath Meleney and Howes recommend a continuous or interrupted suture of the mattress type reinforced by an interrupted fine chromic catgut. They believe that a continuous suture alone is particularly poor. The tensile strength of No. 6 chromic catgut is greater than the holding power of any tissue likely to be sutured with it. Larger sizes cause more exudation and more rapid absorption. In cases in which a transverse incision is made wound disruption is less frequent probably because there is less danger that omental tags will get between the suture lines and there is less tension on the suture.

Colp reports a study of 6 cases of rupture among 750 consecutive laparotomies performed at the Mt. Sinai Hospital New York and 3 cases from private practice. The incidence of rupture was 1.12 per cent in males and 0.75 per cent in females. It was highest in the fourth and fifth decades of life. The underlying lesion responsible for the disruption was a malignant tumor in 28 per cent of the cases, an inflammatory disease of the bile passages in 3 per cent, a gynecological condition such as fibroids in 10 per cent, acute appendicitis in 19 per cent, some other condition such as diverticulitis of the sigmoid, streptococcus peritonitis or fever of undetermined origin in 1 per cent. In 316 cases of carcinoma the incidence of wound disruption was 2.2 per cent. Colp believes that careful preoperative care of cachectic patients may decrease the incidence of wound disruption.

Midline incisions are most apt to rupture. The fact that there was no instance of rupture of a midline epigastric incision in the cases reviewed is attributed by Colp to the use of a special technique for the closure of the incision. The special technique for the closure of the incision is made for gastroduodenal ulcer and all of those made for carcinoma of the stomach. This consisted of the introduction of a single layer of interrupted thick and through sutures of heavy braided silk which were left in place until the fourteenth day. The most frequently used incisions were those made parallel with the linea alba through the rectus abdominis muscle. The most common approach to the rectus abdominis was vertical, placing of the upper part of the rectus muscle. The incidence of wound rupture in this type of incision was 2.2 per cent. In

the lower rectus muscle-splitting incisions it was 0.54 per cent. Of 20 cases in which a para-umbilical rectus muscle-splitting incision was made, disruption occurred in 2.

In the closure of the abdominal incisions the peritoneum was closed with a continuous suture of chromic catgut, the fascia, by interrupted sutures of chromic catgut, and the skin, by a continuous suture of silk, an interrupted suture of silk or silk-worm gut, or by pincettes.

Disruption occurred between the second and the eleventh days after the operation. It seemed to be most frequent on the seventh day, and to occur usually after removal of the skin sutures. While Colp doubts that the removal of the skin sutures had a causal relationship to the disruption, he believes it advisable to leave the skin sutures undisturbed for a longer period of time in the cases of patients with cachexia, weakness, anæmia, distention, or meteorism.

In cases in which wound closure is impossible because of infection, it is probably better to leave the entire wound open rather than merely the skin. Colp packs the wound and leaves it undisturbed for from ten to twelve days. When the pack is removed the granulations are usually so healthy that the wound edges can be approximated with adhesive tape. Healing almost invariably follows. This procedure was used in 23 cases without any untoward results. Abdominal binders are probably of value in preventing evisceration.

In cases with drainage the incidence of wound rupture was 1.22 per cent, and in cases without drainage it was 0.84 per cent.

Wound rupture should be suspected when the dressing which has previously been dry suddenly becomes stained with a bloody serous discharge.

The treatment preferred by Colp consists of packing the wound or secondary suture of all layers with drainage. The tampon method is the procedure of choice in infected cases. Healing requires an average of thirty-seven days. In 19 cases in which the tampon method was used the mortality was 32 per cent. Of 11 patients traced, 7 subsequently developed a hernia. Secondary suture is indicated in clean cases with evisceration but without peritonitis. Of 10 patients treated by this method, 8 recovered and 2 died. The secondary suture was performed with interrupted through-and-through heavy silk sutures over a drainage pack. In the 8 cases in which recovery resulted there were no untoward complications. The period of hospitalization averaged forty-six days.

The cause of death as determined by 5 post-mortem examinations was diffuse peritonitis in 4 cases and hæmorrhage from the gall-bladder bed with dilatation of the stomach in 1 case. The mortality in the series was about 28 per cent.

GRACE reports an analysis of 46 cases of abdominal wound disruption from the First Surgical Division of Bellevue Hospital, New York. Protrusion of the viscera occurred in 36. The type of incision

used was as follows: upper split right rectus, 28 cases, upper split left rectus, 8 cases, median epigastric, 3 cases, lower split rectus, 3 cases, reversed Kammerer, 2 cases, transverse, 1 case, and median suprapubic, 1 case. Thirty-nine of the 46 disruptions occurred in upper abdominal incisions. In all cases a continuous suture of chromic catgut was used. Silk or silk-worm gut was employed only for skin apposition. No retention sutures were used.

The operation was performed for carcinoma in 10 cases, chronic ulcer of the stomach or duodenum in 8 cases, gall-bladder disease and appendicitis in 7 cases each, stab-wounds of the abdomen and perforated ulcer of the stomach or duodenum in 3 cases each, chronic intestinal obstruction in 2 cases, and ruptured typhoid ulcer, ruptured spleen, gunshot wound of the abdomen, abscess of the liver, tuberculosis of the peritoneum, and an undiagnosed condition in 1 case each. The postoperative complications actively favoring the disruption were infection and coughing in 17 cases each, vomiting in 9 cases, distention or obstruction and hiccough in 4 cases each, retching at lavage and difficulty in the suturing in 2 cases each, and the patient's getting out of bed and an unknown cause in 3 cases each. The largest number of the disruptions occurred on the seventh day. Twenty-seven occurred between the seventh and tenth days inclusive.

The sudden discharge of sanguineous fluid from the wound is indicative of wound rupture. The next sign of importance is pain. In 30 of the cases reviewed the disruption was treated by secondary suture and in 16 by strapping or packing or both. Secondary suture consisted of through-and-through silk-worm-gut or silk sutures. Strapping with or without packing was used most often in the cases in which the disruption occurred slowly and, when it was discovered, the extruded contents were already adherent to the deeper wound tissues, also in severely infected wounds. In only 2 of the cases requiring secondary suture did the wound fail to heal. Both of these were controlled by strapping. Of the 28 patients who recovered from the complication, the majority developed a postoperative hernia. In the 36 cases with protrusion of the viscera there were 15 deaths, a mortality of 41 per cent, and in the 10 cases without protrusion of the viscera there were 3 deaths, a mortality of 30 per cent. The total mortality was 39 per cent. In 28 cases treated by secondary suture there were 11 deaths, and in 18 cases treated by strapping and packing there were 7 deaths.

WHITE reports on 30 cases of disruption of abdominal wounds in the Roosevelt Hospital, New York, in which there was a mortality of 53 per cent. Thirteen of the 30 patients were over fifty-five years of age, and 5 were suffering from malignant disease. A median incision was made in 2 cases, muscle retraction was done in 6, and the fibers of the rectus muscle were split in 22. The split rectus incision was made in more than 75 per cent of the cases. Cough was an important fac-

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tor in 6 cases and distention in 3. Infection was present in 8. A discharge of bloody fluid from the wound is indicative of rupture. The amount usually occurs insidiously. In the closure of both fresh wounds in doubtful cases an use of both most satisfactory. While suture lines have proved much reliance on catgut. If there is much tension the entire abdominal wall should be placed through edges is most apt to occur between the eighth and tenth days. The predisposing factors are senility, decrepitude, malignancy, jaundice and a peculiar body tissue function that dissolves catgut earlier than usual.

Helen reports that of 145 laparotomies performed by him rupture of the wound occurred in 4 or in 1 of 536 with 2 deaths. Of 1000 laparotomies performed at the Postgraduate Hospital New York in 1933 a rupture occurred in 4 or in 250 with 1 death a mortality of 25 per cent.

Three types of wounds may result in disruption occurs normally but rupture occurs following removal of the sutures. The second is the wound through a gap in the small intestine works its way into cases of such wounds vomiting and abdominal distention are more marked than usual. The wound third type of wound in which disruption is apt to occur is the wound which shows evidence of inadequate healing. The skin edges are everted and edematous and red. This condition is especially apt to occur in cases of nephritis, diabetes, carcinoma and jaundice. In the majority of the cases reviewed were not removed until between the tenth and fourteenth days.

Heldel gives that the incidence of wound disruption can probably be decreased by (1) complete hemostasis in all abdominal wounds (2) relaxation of the abdominal wall during the closure of abdominal wounds (3) the avoidance of undue trauma (4) the elimination of dead space (5) an absolutely aseptic technique and (6) accurate coaptation of peritoneum.

## GASTRO INTESTINAL TRACT

River A B Clinical Consideration of the Etiology of Peptic Ulcer. *Arch Int Med* 1934 100: 97

An attempt has been made to apply some of the hypotheses advanced to explain the causation of peptic ulcer to the clinical problems of ulcer in man. In all probability peptic ulcer is the result of several interacting and variable factors. Physiologists have demonstrated that the aggressive action of undiluted juice can produce ulcer by its erosive potential as nitro contact with tissues unaccustomed and un-

protected by nature to receive it. The author suggests that this factor of aggression may be more likely to cause ulceration when the resistance of the tissues exposed is in some way lowered by trauma. Thus an infected intestinal wall, a mucosa injured by mechanical or chemical irritants might succumb and disintegrate when a membrane might succumb protecting mechanism would remain intact. Systemic factors if conducive to the diminution of resistance of tissues or capable of producing prolonged or persistent accentuation of the aggression factor of the acid chyme might increase the liability to the development of ulcer and recurrence in such cases. There seems no doubt that the factors involved in the formation of ulcer vary in different persons at different times. Consequently every patient presents problems requiring careful study. Such a study should reveal the particular factor or combination of factors which will obtain in each case and correction of these factors should be expected to result satisfactorily when applied in the treatment of the ulcer.

The author reports a series of ten cases.

Abel A L Acetylcholine in Paralytic Ileus. *Lancet* 1933 CCX 147

The author states that in fifty cases of normal convalescence from a laparotomy he used acetylcholine routinely in the postoperative treatment starting with 0.1 mgm this six hours after the operation and repeating this dose every six hours until flatus or feces were passed without an enema. This result is obtained in many entirely untreated cases in from six to twelve hours.

In numerous cases of general peritonitis in which he used acetylcholine Abel guards the impression that the postoperative course was more favorable than it would have been without such treatment. However he believes that acetylcholine must be used in many more cases before it can be recommended for the postoperative treatment of every case in which laparotomy is done.

In several cases in which there was doubt as to whether the condition was due to mechanical or paralytic obstruction Abel gave 0.1 gm of acetylcholine hourly for six doses. By this treatment obstruction was frequently avoided. In cases of organic obstruction no untoward effects were produced. Most patients with severe postoperative distention, gas pains and paresis of the bowels are considerably benefited by the administration of acetylcholine by intramuscular injection. In paralytic ileus acetylcholine appears to be almost specific in effecting a cure.

Martinotti G The Pathogenesis and Clinical Colonological Symptomatology of Dolichocolon. *Gazzetta medica italiana* 1933 477

This article is based on a careful study of a number of cases of dolichocolon which the author ob-

served personally. The term "dolichocolon" means an increase in the length of the colon. This condition is most often confused with megacolon. Further complicating its recognition is the difficulty in establishing the limits between normal variations and beginning dolichocolon. The author outlines a technique for roentgenological examination which he considers necessary to establish the diagnosis definitely.

Total dolichocolon is rare. As a rule the lengthening occurs only in segments of the colon. Many variations occur, but the most common is the so-called segmentary dolichocolon in which only one segment is lengthened and the remainder of the colon is of normal length. In compensatory segmentary dolichocolon there is an increase in the length of one loop, but the adjoining loops are smaller than normal so that the total length of the colon is normal. In a certain number of cases there is an associated megacolon, in other words, a megacolon. The author believes that when the two conditions co-exist the dolichocolon was primarily the mechanism of dilatation depends principally on stenosis of position (kinking) and segmentary reflex atonia. To make the diagnosis of dolichocolon in such cases the pre-existence of the lengthening must be definitely proved. The various types of dolichocolon encountered and the distinctive roentgenological findings and the distinctions described in great detail.

The etiological theories are discussed. To the anatomical or congenital and the physiopathological theories the author adds the theory of mixed causes, a combination of the two. According to the latter, an anatomical anomaly is the basis on which a pathological process acts to lead eventually to an accentuation or increase of the congenital malformation. True dolichocolon is congenital. The condition has been demonstrated in infants.

The author discusses the symptoms in detail. In the true congenital type of case there are few if any symptoms unless complications develop. In the type of case in which the physiopathological element predominates there may be many varied and vague symptoms. In any event there is no clear-cut clinical picture, and as a rule the symptoms are those occurring in any other colonic condition. In many cases dolichocolon is discovered accidentally in the course of X-ray examination.

In conclusion the author states that while he believes dolichocolon is of congenital origin, the increase in the length of the colon may be further increased by functional abnormalities due to mechanical or nervous factors.

F. BARNFORD JONES, M.D.

Patterson, D. C. Appendices Epiploicae and Their Surgical Significance, with a Report of Three Cases. *New England J. Med.*, 1933, cclx, 1255.

Bland-Sutton describes appendices epiploicae as localized, pedunculated overgrowths of subserous fat directly continuous with the fat in the mesentery

They may have a protective function similar to that of the omentum, but their chief function is unknown. They may be affected by (1) inflammatory changes, (2) torsion of the pedicle, (3) calcification and the formation of loose bodies, and (4) incarceration and the hernial sac with or without torsion. The diagnosis of these conditions is possible only at operation. The symptoms may simulate those of almost any abdominal disease, but are especially apt to suggest diverticulitis. In some of the cases in which the diseased appendage was on the sigmoid, appendicitis was suspected.

The author thinks that disease of the appendices epiploicae is more frequent than is generally believed, and that the possibility of its presence should always be borne in mind. He is of the opinion that it may be responsible for some of the abdominal disturbances in which recovery occurs without operation or diagnosis. It should be considered when exploration of the abdomen fails to reveal any of the diseases usually responsible for acute abdominal symptoms. Of the three cases reported by Patterson, one was a case of acute inflammation, one of torsion of the pedicle found during hysterectomy, and one of incarceration in the sac of a femoral hernia.

CLARENCE C. REED, M.D.

Gundel, M., and Mayer, F. Statistics and Frequency of Appendicitis (Ueber die Statistik und Häufigkeit der Appendicitis). *Ergebn. d. Chir.*, 1933, xxi, 490.

Appendicitis is steadily increasing in frequency in all countries. Reports in the literature differ as to the incidence of the condition in males and females. The mortality is inversely proportional to the incidence of the disease in the various age groups. Appendicitis is most frequent between the ages of eleven and thirty years. The mortality is highest among infants, a fact explained, in part, by the difficulties of diagnosis. Chronic appendicitis occurs more frequently in women than in men. Acute appendicitis during pregnancy is very dangerous, its mortality ranging from 30 to 40 per cent in contrast to the general mortality of from 5 to 10 per cent. Women of the child-bearing age who have had one attack should be urgently advised to have an interval operation before pregnancy occurs.

According to Prinzling's statistics, the mortality is highest in the higher social groups. It varies greatly in different countries. In spite of improvement in the education of physicians, operative technique, and transportation facilities, the absolute mortality has increased everywhere. In Spain and Italy the mortality is lower than in Sweden and Scotland. Switzerland has the highest mortality. In all countries and at all ages the mortality of males is greater than the mortality of females. The authors discuss appendicitis in Germany in more detail. As compared with the prewar period, there has been a 3-fold increase in the morbidity of the condition. During the war the morbidity was sharply decreased in all countries. In spite of an

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increase in the absolute mortality the relative mor-  
tality has fallen. In 1923 the mortality was 2.38  
per cent and in 1929 1.38 per cent. In Germany  
the morbidity is higher in females than in males but  
the mortality is higher in males than in females. The  
morbidity and mortality vary in the different pro-  
vinces and states. The mortality is highest in Bas-  
sania but even there it is considerably lower than in  
Scotland and Sweden. Fatalities are more frequent  
in cities than in rural districts. However no con-  
clusions may be drawn from this fact as most of the  
patients from rural districts are operated upon in  
city hospitals. While the relative figures for all age  
groups show that the mortality is highest after the  
age of fifty years the absolute figures which are  
based on the greatest incidence of the disease show  
that it is highest between the ages of twenty and thirty  
years. In Germany the cost of appendicitis for the  
state and society is now estimated at 30,000,000  
marks annually and is increasing.

The article contains numerous

times in the initial stage are so mild that they are disregarded. The lesion sometimes develops rapidly. In some of the author's cases it developed in two or three years.

Three types of stenosis are:

- (1) the annular
- (2) the
- (3) the

Three types of stenosis are described: (1) the valvular (2) the annular and (3) the cylindrical tubular. Mixed types are frequent. The mucosa may show strawberry vegetations which bleed easily. It may be congested and red, grayish or whitish. Fistulous tracts in the perianal region are common.

Among the factors that have been held responsible for the condition are syphilis, chancroid infections (Ducrey bacillus), gonorrhea, tuberculosis, mycoses, lymphogranulomatosis, inguinal and trauma.

There is much clinical experimental biological and anatomical evidence indicating that the condition has its origin in lymphogranulomatosis. The author summarizes this as follows:

Clinical evidence Rectus abdominis The rectum have developed Rectus abdominis The

The intravenous injection of antigen is specific to a febrile reaction. In cases of lymphogranuloma testis obtained from fistulae of lymphogranuloma stenosis causes a positive intradermal reaction. Anatomical evidence. The pathological reaction in hyperplastic conditions. The pathological reaction in hyperplastic conditions.

The author believes that the retrorectal lymphogranulomatosis is a similar covered only by dermal folds and inguinal lymphogranulomatosis of the anal folds and anatomical evidence. The pathological changes in periplastic evidence. The pathological changes in periplastic evidence. The pathological changes in periplastic evidence.

The author believes that the cause will be discovered only by determining whether the rectal and retrorectal gland lesions are the same pathological infection of lymphogranulomatosis as those of lymphogranulomatosis of the prostate.

The author is of the opinion that in many cases the etiological agent may be the agent responsible

De Gregorio E Contributions on Twenty One  
Cases of Rectal Stenosis—The Anal and  
Sphincter of Fournier (Ap rta es be  
ca x d i la tal—floxma no i de  
Fou ni) P g d i t V and 933 x 704

In all of the twenty one cases reported by the author there was a history of the passage of mucus and blood at some time previous to the development of the stenosis. De Gregorio says that this may be an indication of the beginning of the disease. With regard to four patients with a positive Frei test no had mild constipation by perphasis of the rectal walls and hardened mucosal folds without stenosis he says that late observations will be of mte int to determine whethe the stenosis develops or not. In one of the cases reviewed the stenosis developed after a pelvic abscess which drained through the rectum but there was no adenopathy. In another case rectitis and an annular stenosis developed after a fistomat of an abscess in the intestine. In the case of the anus and its drainage through the rectum above the case of rectal stenosis was that of a woman whose husband had been treated for typical lymphogranulomatosis two years previously.

All of the cases reviewed by the author and eighteen cases reviewed by the author.

All of the cases reviewed were those females and eighteen of the women were prostitutes. Their positive reaction to Frei's and Levad's antigens and twenty reacted positively to D Melcos vaccine. These results are contrary to those obtained by most other investigators who have found the Frei test positive and the Flo Reents erga test negative. The anorectal syphiloma of Fourmier is characterized by thickening of the walls of the rectum near the sphincter region with loss of elasticity and flexibility of the lower intestinal wall but without reduction of the lumen or the presence of ulcerations or scars. When the cases come under observation some degree of stenosis is usually found as the symp-

for lymphogranulomatosis inguinale, but that syphilis and chancroid infections may also play a part  
W H MARTINEZ, M D

Ladd, W E, and Gross, R E Congenital Malformation of the Anus and Rectum *Am J Surg*, 1934, LXXIII, 167

This report is based on a careful study of 162 cases of anal and rectal abnormalities

Following a discussion of the embryology of the anorectal region the authors present their own classification of anorectal anomalies which is based on clinical studies and is of value in determining the form of treatment and the prognosis (1) stenosis of the anus, (2) membranous obstruction of the anus, (3) imperforate anus, but with separation of the rectum from the anus, and (4) anus and anal canal normal, but with separation of the rectum from the anal pouch The external anal sphincter is present in all 4 types In 52 per cent of the cases reviewed fistulae of various types were present

The symptoms and physical signs in these cases are essentially those of complete or partial intestinal obstruction In the reviewed cases of imperforate anus and rectal atresia there was complete obstruction whereas in the cases of anal stenosis and those with fistulae the evidence of intestinal obstruction was less marked In all cases careful examination of the anus and rectum yielded sufficient information for diagnosis and classification of the case X-ray examination with the infant in the inverted position was a valuable aid in determining the distal extent of the rectal pouch in cases of imperforate anus and rectal atresia In the first fifteen or twenty hours of life even this method is not entirely reliable as some time is required for gas to reach the lower intestinal tract

The treatment varied with the type of case, but the essential feature, of course, was the establishment of continuity of epithelium between the rectum and skin to prevent scar formation with constriction The external sphincter was always used to provide adequate control In the cases of stenosis repeated dilatation was usually sufficient When the canal could not be dilated, it was excised and the rectal mucosa was brought down In cases of membranous imperforate anus a cruciate incision followed by dilatations was sufficient The cases of Groups 3 and 4 presented the greatest problems The majority of these were operated upon by the perineal approach The rectum in such cases was brought down through the external sphincter and the mucosa sutured to the skin When the rectal pouch was not long enough to permit this, colostomy was performed However the perineal operation was possible in the majority of the cases—86 per cent of those of Group 3 and 66 per cent of those of Group 4 When fistulae were present it was found to be expedient to vary treatment according to the location of the fistulae The lower ones (rectoperineal, rectofossa navicularis, and rectovaginal) were relatively easy to close when the rectal abnormality

was corrected during the first few days of life The higher ones (recto-urethral and rectovesical) were difficult to reach through a perineal incision Consequently it was found best to delay treatment of these until the patient attained the age of eight or nine years

In the total number of cases there were 43 deaths Twelve were directly attributable to associated congenital abnormalities This leaves a mortality rate of approximately 19 per cent for the anorectal abnormalities and their complications As might be expected, the mortality was lowest (9.5 per cent) in the cases of Group 1 and highest (61.6 per cent) in those of Group 4  
T BANFORD JONES, M D

#### LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Schiassi, B Calculosis of the Gall Bladder (La calculose de la vesicule biliaire) *J de chir*, 1934, LVIII, 8

Since cholecystectomy was first performed by Langenbeck in 1882, it has become a standard operation which is carried out in thousands of cases of cholelithiasis yearly However, regardless of its popularity, experience has gradually demonstrated that it is currently undertaken with much more optimism than is justified by its results According to one authority, complications occur in 50 per cent of the cases in which it is done

For many years the author has been reluctant to remove the gall bladder, and since 1900 he has been an active opponent of cholecystectomy as a routine measure Whenever possible he has limited operation for cholelithiasis to evacuation of the gall bladder followed by complete closure, believing that the gall-bladder possesses important functions and therefore should be conserved

When the sphincter of Oddi opposes the flow of bile into the duodenum the gall bladder acts passively as a reservoir While the bile remains in the gall bladder, the gall bladder concentrates it 5 times by removing part of its water content By active contraction (the claims of Winklesstein notwithstanding) the gall bladder empties its contents into the duodenum at the moment when the chyme is most abundant

Following cholecystectomy the sphincter of Oddi loses its tonicity and the flow of bile into the duodenum becomes continuous or the tonus of the sphincter is retained and the common duct and the hepatic ducts with their first branches become dilated and assume the function of the gall bladder

The pathological changes following cholecystectomy include progressive destruction of the epithelium and fibrosis of the walls of the larger bile ducts, conditions favoring infection of the biliary tract, an increase in intestinal putrefaction and in the virulence of the intestinal flora, reduction of pancreatic secretion by at least two-thirds (Iverson), and interference with the digestion of fat These are the intrinsic effects of the operation Possible

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extrinsic effects include pancreatitis pericholecystic adhesions, periductitis and pericolicitis with adhesions and stenosis and biliary fistula. Because of the frequency of these complications, Rosenthal said, "Never promise a patient about to undergo cholecystectomy that he will not suffer after the operation." The mortality from peritonitis, hemorrhage, shock and hepatic degeneration after the operation is not inconsiderable. The hepatic changes are especially important. Schiassi performs cholecystectomy only when the walls of the gall bladder are altered to such a degree that the function of the organ as a contractile reservoir is seriously limited. He states that in cases in which the gall bladder wall is only moderately thickened the mucosa is only slightly ulcerated and the serosa is smooth and pale. Cholecystectomy is sufficient. When the serosa is smooth, the other tunics are little thickened and the mucosa is free from ulcerations, cholecystectomy is the operation of choice. This consists in liberation of the gall bladder and evacuation of the calculus followed by complete closure. It was first performed by Loretta of Bologna in 1875. The author shows the technique by illustrations. He and his colleagues have obtained satisfactory results from cholecystectomy in 314 cases.

LAURENS E. The Surgical Treatment of Cancer of the Ampulla of Vater (Tumors of the Ampulla of Vater) J. d. A. 1933, 214, 833.

Of the cancers of the small intestine, those of the duodenum are the most common. Tumors of the ampulla of Vater and may arise from the ampulla itself, the duodenal mucosa, the duct of the pancreas or the head of the pancreas.

Depending upon the origin of the tumor, the first result of cancer of the ampulla is obstruction to the flow of bile or the pancreatic secretion. Practically however, the initial symptom is always icterus. The icterus may be slight and intermittent but usually is continuous and becomes progressively more in the faces are clay colored and heavily charged with fat and protein and the urine is highly pigmented. When there is a complicating biliary infection, epigastric pain and fever occur. Eventually hepatic degeneration and toxic nephritis develop and the patient dies with oliguria, vomiting and deepening coma.

Physical examination reveals no tumor. The liver is large and unless cholelithiasis complicates the picture, the gall bladder is distended. Cholecystography shows only the absence of a gall bladder shadow. Roentgen examination of the gastro-intestinal tract may reveal hyperperistalsis in the duodenum and occasionally a small defect in the inner border of the shadow of the second portion. Analysis of the duodenal contents and of the feces for blood is usually negative. In the differential diagnosis, stone in the common duct, chronic pancreatitis and carcinoma of the pan-

creas must be ruled out. In cases of stone in the common duct, pain precedes the icterus and the icterus is intermittent. In chronic pancreatitis and carcinoma of the pancreas, there is a palpable tumor.

The treatment of cancer of the ampulla may be palliative or radical. Palliative operation consists of internal or external drainage. The results of both types of drainage are poor. According to Gosset, the mortality of internal drainage is 75 per cent and that of external drainage is 70 per cent. The radical operation consists of removal of the tumor. The radical operation was first performed by Halstead in 1893. The patient died seven months later from recurrence. In 1900 Mayo reported the case of a patient who survived the operation two years. At the present time about sixty-four cases are on record. In fifty-one the tumor was removed by the transduodenal route and two by the retroduodenal route and in two through the common duct. In two instances a segment of the duodenum was resected. Among the seven two-stage operations, cholecystectomy was performed twice, drainage of the common duct twice, cholecysto-enterostomy three times, excision of the tumor by duodenotomy five times and excision of the tumor by resection of a segment of the duodenum twice.

The value of the radical operation depends upon the variety of the tumor. Tumors originating in the terminal portion of the common duct in the duct of the duodenum or in the duodenal mucosa possess the degree of malignancy common to cancers of the intestine and metastasize to the regional lymph nodes. True tumors of the ampulla remain strictly localized for long periods.

The difficulties of a radical operation are much less formidable than is generally supposed. Whether the operation is performed in one or two stages, the first step should be diversion of the flow of bile. External drainage is a choice may be condemned. For internal drainage a choice may be made between cholecysto-enterostomy, cholecystogastrostomy and choledochogastrostomy. Cholecystogastrostomy is undesirable because the gastric juice eventually damages the gall bladder mucosa. Most surgeons anastomose the common duct to the duodenum. When this is done by Coffey's method, there is no reflux of the duodenal contents. When the gall bladder is distended, anastomosis with the jejunum is preferable. A long loop of jejunum or the Y anastomosis of Moynihan should be used. The latter eliminates the danger of angiocholitis.

Depending upon the patient's general condition, the second stage of the operation, removal of the tumor, may be performed immediately or delayed for two weeks. The initial exploration to establish the presence of the tumor must be direct through an incision of the duodenum. The tumor is often no larger than a pea and may be overlooked if only palpation of the duodenum is done. As the tumor is often friable or mobile, sounding of the common duct may also lead to error. The duodenum should be



mobilized and then opened by an incision along the right border. The tumor has the appearance of a small cauliflower growth or an ulcer. When it is a cauliflower growth it has arisen in the ampulla and is sharply outlined. When it suggests an ulcer it is a malignant intestinal cancer and the surrounding mucosa is indurated. To excise the ampulla a circular incision should be made. Usually this need be no deeper than the submucosa. If the musculans is included, the pancreatic duct must be re-implanted in the duodenum and the common duct ligated at its origin.

Resection of the duodenum with or without the head of the pancreas is a difficult and shocking operation. Moreover, for cancer of the ampulla it is more extensive than necessary, and for cancer extending beyond the limits of the ampulla it falls short of a rational operation for malignancy. Coffey has systematized the technique, but the procedure has been attempted only five times.

Radium therapy has apparently been employed only rarely. In one case, Abell (1924) fixed the radium in close contact with the tumor through a

duodenal incision and for removal attached it to a heavy thread previously introduced by mouth. Handley (unpublished case) introduced needles into the neoplastic mass by the retroperitoneal route and brought the threads to which they were attached out of the abdomen through a large drain. Because of the marked oedema produced by the radium and the menace of complete duodenal obstruction, a preliminary gastro-enterostomy is essential.

The author gives the histories of two personal cases. Both patients were operated upon in one stage. Internal drainage of the bile was established by a Y cholecystojejunostomy. A generous loop of the upper end of the jejunum was sectioned and the lower end passed through the transverse mesocolon and implanted in the gall bladder. The upper end was anastomosed to the side of the lower segment of the loop, end to side. In both cases the tumor was small and could be excised by an incision of the mucosa and submucosa alone. When seen respectively nine and forty-six months after the operation, the patients were in good health.

ALBERT F. DE GROAT, M.D.

# GYNECOLOGY

## UTERUS

Plakie G E and lastine J H Irradiation in the Treatment of Fib myoma of the Uterus  
Am J R ontg n l 934 223 5

The authors believe that irradiation is the treatment of choice for (1) all cases of fibromyoma in women near or past the menopause in which the tumor extends no farther than mid way between the symphysis and umbilicus is not undergoing degeneration and is not causing intolerable pressure symptoms (2) all cases of fibromyoma in women with marked organic heart disease diabetes nephritis pulmonary tuberculosis or other constitutional condition which would contra indicate surgical removal and (3) all cases of large fibroids in which immediate operation is contra indicated by anemia

It is contra indicated by (1) malignancy of the uterus or adnexa (2) tumor masses extending farther than midway to the umbilicus unless operation is refused or there is a definite contra indication for operation (in which case irradiation is justified for a fibromyoma of any size) (3) pedunculated or submucous tumors (the results in the treatment of such tumors are less favorable as the bleeding often continues after the irradiation) (4) large fibromyomata which are producing distressing pressure symptoms and yield to irradiation too slowly and (5) fibromyomata which have undergone cystic degeneration or are gangrenous

In the cases of young women with the desire for and the possibility of pregnancy myomectomy is the treatment of choice. If operation is refused or if myomectomy is impossible treatment by irradiation is justified. Care must be taken to protect the ovaries.

The advantages of roentgen therapy are summarized as follows

- 1 Roentgen rays are almost universally available
- 2 They are more useful than radium as they produce a more direct and homogeneous effect on the tumor as well as on the ovaries
- 3 Roentgen therapy can usually be applied without seriously interfering with the patient's occupation
- 4 It is less expensive as hospital costs are avoided
- 5 The effect is produced more gradually than by operation or radium irradiation
- 6 It eliminates nervous shock as well as any objection to intra uterine applications
- 7 It produces no caustic action on the endometrium

The authors use 300 kv 4 ma a filter 1.05 mm of copper and a distance of 50 cm. In cases of small fibroids they employ three portals one anterior and one through each sacrospinous notch the central rays

being directed through the uterus. If the tumor is very large more portals must be employed and great care must be taken to prevent fat necrosis from cross fire on the subcutaneous tissue. As a rule the authors give 50 per cent doses serially through each of the three fields until 100 per cent is given through each field. In cases of large tumors twice this amount is necessary. Because of the danger of fat necrosis fibrosis telangiectasis and cross fire effects on the subcutaneous tissue near the surface the authors avoid giving more than a total of 250 per cent through any abdominal field.

With regard to radium therapy the authors state that as a patient may have both a fibroid and a carcinoma of the body of the uterus they perform a dilatation and curettage before introducing the radium. If the pathologist's report shows malignancy the radium is left in place for a longer period of time. In cases of small fibroids a single application of radium is usually sufficient. A polypoid endocervicitis associated with the fibroid will also be treated successfully with the fibroid will also be cured usually causes cessation of the hemorrhage. The authors use their own applicator which is curved like a uterine sound and will accommodate two or three 50 mgm capsules. The radium is screened with 1.05 mm of aluminum and 0.5 mm of lead rubber 1.05 mm of platinum and 0.5 mm upon the condition present. The vagina is well packed both to keep the applicator in place and to displace the bladder and rectum. In cases of large fibroids and cases of malignant disease the authors used both radium and deep roentgen therapy.

Alzar M Volzmer MD

## ADNEXAL AND PERIUTERINE CONDITIONS

Rubovits W H and Kobak A J Fall 1934  
Tubal Sterilization (Mad n ) Am J Obst Gynec 1934 22 12

Two cases in which the Madlener tubal sterilization was followed by pregnancy were studied by serial sections. Each case represented a different manner of restoration of the function of the tubes. One tube appeared to have recovered its patency by an endosalpinx whereby an approximation of the tubes shunted the loop of crusting and ligation. The other tube recovered its function because the ligature cut through one loop and encircled the other portion with little constriction.

In two cases X-ray examination showed hypodilatation passing through the portion of the tube operated upon without a free spill into the abdominal cavity. The authors conclude that the results of the Madlener operation must be checked by laparotomy.

zation at a later date. X-ray examination is of value also in the study of histological segments of re-opened tubes when they are removed.

EDWARD L. CORNELL, M D

Cornil, L., Mosinger, M., Imbert, R., and Harvey, R. A Histogenetic Classification of Tubal Epitheliomata (Sur une classification histogénétique des épithéliomas tubaires) *Gynec et obst*, 1933, LXXVIII, 561

Tubal epitheliomata are rather rare, only 400 cases having been reported in the literature to date. However, their apparent rarity may be due to neglect on the part of pathologists to examine extirpated tubes. Lecène and Hamant are of this opinion. In a systematic study of suspected tubes during the past year the authors found 2 cases of tubal epithelioma and 1 case of benign wolffian tumor of the tubal wall. Wolffian dysembryoplasia is not rare.

The symptoms of tubal epithelioma are not characteristic. Of the 2 epitheliomata reported by the authors, the first was a papillary epithelioma and the second a microcystic, partly solid, tubular tumor springing from the tubal wall. Two theories as to the origin of the latter are offered, the first that the tumor developed on an endometrioid basis, and second that it was due to wolffian dysembryoplasia. The authors question the theory that in primary tubal epithelioma the serosa is always intact and its extension is always exophytic. The primary nature of a tubal epithelioma must be determined by excluding the possibility of ovarian or uterine metastasis. Another factor leading to confusion is the marked histological resemblance between tubal epithelioma and the wolffian tumors, i.e., a papillary structure and an epidermoid evolution.

The following suggest wolffian tumor (1) a tendency toward cyst formation, (2) a mucoid evolution, and (3) phenomena of cellular degeneration.

When a uterine tumor and a tubal tumor are associated the tubal tumor may be a metastasis from the uterine tumor if the uterine os is invaded and a papillary structure is lacking. The tubal epithelioma is primary if the uterine metastasis is papillary. In these cases the os uteri remain intact. The two tumors may develop simultaneously.

It is sometimes extremely difficult to differentiate sarcoma from epithelioma of the tubes especially as there are true tubal sarco-epitheliomata. Simple hyperplasia may often simulate cancer.

In conclusion the following 3 histogenetic types of tubal tumor are distinguished:

1. Orthoplastic epithelioma presenting 2 types of growth, i.e., endophytic and exophytic.

2. The metaplastic epithelioma developing on an endometrioid basis at the expense of pre-existing mucoid islets.

3. The wolffian dysembryoplastic epithelioma.

At a certain stage of development a histogenetic diagnosis of these tumors is impossible. This explains the confusion in published morphological descriptions.

EDITH SCHACHE MOORE

Melnick, P. J., and Kanter, A. E. Theca-Cell Tumors of the Ovary. *Am J Obst & Gynec*, 1934, XXII, 41

Certain ovarian tumors exert hormonal effects. Of the feminizing type there are two, the granulosa-cell tumors and the theca-cell tumors. Theca-cell tumors have been recognized only recently. The authors report two such tumors which caused hyperplasia of the myometrium and endometrium and postclimacteric bleeding. In one case the bleeding was periodic, resembling the normal menstrual cycle. The tumors are composed of cells which have the histological characteristics of theca interna cells. Apparently they secrete theelin. This conclusion is supported by considerable experimental and deductive evidence from the literature indicating that the theca cells secrete the estrogenic hormone.

Unfortunately, the tumors reported were formalin fixed before implantation experiments could be carried out, and no blood or urine tests for hormone were made.

The authors conclude that in cases of bleeding after the menopause in which nothing of an etiological nature is found in the systemic or local examination and curettage is unsuccessful, colpotomy should be done and the ovaries examined for tumors.

EDWARD L. CORNELL, M D

Kleine, H. O. The Status of Granulosa Carcinomata of the Ovary from the Clinical, Histological, and Radiological Standpoints (Die Sonderstellung der Granulosacarcinome des Ovariums in klinischer, histologischer und strahlentherapeutischer Hinsicht) *Strahlentherapie*, 1933, XLVII, 326

The author reports twelve cases of granulosa carcinoma of the ovary. The endocrine effect of this tumor, which depends on the function of the granulosa epithelium, is manifested strikingly by stimulation of the growth of the mammary glands, the myometrium, and especially the tubal mucosa and the endometrium, as was first shown by Meyer. Glandular hyperplasia of the endometrium is practically pathognomonic of granulosa carcinoma. Heterotopic invasions of the uterine wall by the endometrium have also been demonstrated. As a rule there are uterine hemorrhages. These are particularly apt to occur when the tumor develops in childhood or after the menopause.

The author observed a case of granulosa carcinoma in a child of three and one-half years, the youngest patient with this disease to be recorded in the literature to date.

The author's studies demonstrated for the first time that the pituitary gland may show no characteristic histological changes in cases of granulosa carcinoma. Two of his patients had widespread metastases, evidence of the carcinomatous nature of these tumors.

Morphological, embryological, and hormonal experimental investigations support the assumption that these ovarian blastomata arise from the

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granulosa epithelium and demonstrate that women in the child bearing age become normal after extirpation of the tumor. Like others the author has found granulosa carcinomata highly radiosensitive. Partially extirpated tumors have been treated successfully by X ray irradiation.

Many previous reports concerning the radio sensitivity of malignant ovarian tumors are worth less because of their lack of histological data. All reports of cures of ovarian tumors by irradiation should include a detailed description of the histological findings.

HANS O. KLEMANOV (G)

## MISCELLANEOUS

Grigoriev A P, Morosoff A N, and Serdukoff M G. The Influence of Ovarian and Causal Substances on the Organs and Tissues of the Female Pelvis. An Experimental Study (Su). *Journal of the American Medical Association* (Surgical Section) 1933 12 1 603.

Hysterosalpingography is employed to determine (1) the condition of the uterine cavity (2) the relations between the cervix and body of the uterus (3) the relief of the mucosa and its condition in the uterine cavity (4) the presence of submucous tumors and polyps of the uterine cavity (5) the topography, configuration and size of the uterine cavity in cases of pregnancy elements (6) the presence or absence of pregnancy elements in incomplete abortion (7) the presence of extra uterine pregnancy (8) the presence of uterine genital parts in certain teratological cases (9) the presence of obstruction and constriction of the fallopian tubes and (10) the depth and topography of the artificial vagina formed by the operations of Baldwin and Mun.

The various opaque substances used differ in their irritating effect on the tissues of the genital organs. Those most commonly employed are lipodol, iodipn, eggrol, orchochron, collargol, and sodium bromide. In order to study the effect of these substances on the tissues more carefully the authors carried out a series of thirty four experiments on dogs injecting the various substances into the uterus and tubes under pressure without pressure and under normal conditions. The technique and results of the experiments are reported in detail.

1 The clear roentgenograms are drawn with the use of lipodol and barium emulsion.

2 According to control roentgenograms obtained in the normal uterus for nearly two weeks its presence after two weeks indicates an imperfect uterus and a pathologic anatomical process.

3 In the pregnant uterus the opaque masses distribute themselves in a peculiar manner between the coverings of the fetus and the uterine walls forming spots of different sizes.

4 Roentgenography does not always show the quantity of residual opaque substance which is present in the walls of the uterus and can demon-

strated only by histological examination. This may be explained in part by defective roentgenographic technique and in part by the distribution of opaque substances in process of dissolution which cannot be shown in the film.

5 In the different experiments with lipodol the effects on the tubo uterine wall were quite different. After insufflation under pressure the incidence of changes was 75 per cent and the atrophic changes were marked. After insufflation without pressure the incidence of changes was 40 per cent and atrophy was less pronounced or wholly absent.

6 Lipodol is resorbed in two weeks in the non mal uterus but persists longer than two weeks in the non developed uterus or in inflammatory or degenerative conditions of the latter.

7 Satisfactory results were obtained with barium emulsion without any change in the uterus.

8 Leucorrhea after the injection of iodine is transitory.

9 The resorption of the opaque substances occurs by continual penetration of the latter into the wall of the uterus to the peritoneal layers.

10 The changes in the ovaries manifested by diminished function were noted only when iodine was used and those manifested by marked hyperemia of the ovaries and the whole peritoneum when nitrate of silver was used.

11 In all of the experiments with lipodol and barium no change was observed in the ovaries the peritoneum or other tissues of the smaller pelvis.

12 When the indications and contra indications are carefully considered and a correct technique is used hysterosalpingography is free from danger.

EDITH SEANACHIE MOORE

Mazet C and Katz H R. Clinical Evaluation of Combined Iodol and Thapy. *Journal of the American Medical Association* (Surgical Section) 1933 12 1 609.

Mazet and Katz studied the effect of prolan and extract of the anterior lobe of the pituitary gland when used individually and combined. By prolan they mean the anterior pituitary like substance obtained from the urine of pregnant women. In the reports in the literature and in his own experience Mazet found that only 10 per cent of amenorrheic women respond to prolan alone. However prolan has a favorable effect on functional uterine bleeding due to pituitary deficiency. The explanation is that severe pituitary deficiency are due to more and require more stimulation than functional bleeding and that there is a variability of prolan can produce a normal menstrual development though it has a biological effect.

The work of other investigators has indicated a form of similarity between prolan and the anterior lobe of the pituitary gland. Prolan was found to stimulate the prehypophyseal anterior lobe of the pituitary gland into an active sex hormone.

The authors confirmed the findings of Evans in rats and of Leonard in rabbits that the combination of extract of the anterior lobe of the pituitary gland and prolan causes a much greater ovarian response than either of the two products employed individually. There appeared to be an unknown principle in the pituitary extracts which, when employed individually, produced no gonadotropic or growth effects, but when used in combination with prolan produced ovarian stimulation far greater than that produced by prolan alone.

Fifty patients with amenorrhœa or oligomenorrhœa were given three weekly injections of 4 c cm of pituitary extract and from 30 to 40 rat units of prolan. The number of injections varied from twenty to sixty. Only nineteen of the entire group of fifty responded to the injections by six or more menstrual flows at regular intervals and of fair quantity. A few menstruated while under treatment, but did not continue to menstruate after the treatment was stopped. Only one of the nine women suffering from hypomenorrhœa responded to the treatment.

The best results were obtained in cases of definite pituitary deficiency. Thirteen of the twenty-four women classified in this group responded favorably to the treatment, while only one of thirteen women suffering from primary ovarian failure was benefited. The authors describe the characteristics of the patients with pituitary or ovarian deficiency.

Primary dysmenorrhœa was not influenced by the injections of pituitary extracts and prolan.

A F LASH, M D

Sommer, S. The Serum Diagnosis of Gonorrhœa in the Female (Zur Frage der Serodiagnose der weiblichen Gonorrhoe). *Ztschr f Geburtsh u Gynaek*, 1933, cvi, 185.

In a study of the practical value of the complement-fixation reaction in gonorrhœa the author examined 308 sera "Comphgon" and a preparation of the Department of Public Health of Prague were employed as antigens. These 2 preparations proved to be equally reliable.

Of 106 cases of chronic gonorrhœal adnexitis, the causal organism could be demonstrated bacteriologically in only 27 per cent, whereas the serological examination was positive in 95 per cent. A strongly positive and a positive reaction constitute strong presumptive evidence of the presence of gonorrhœa, but a weakly positive and slightly positive reaction must be interpreted in conjunction with the clinical findings and are indications for further study of the case.

In acute gonorrhœa a positive reaction is very rarely observed before the fourteenth day. Therefore the significance of the test is much less in superficial processes limited to the mucous membrane than in chronic adnexitis.

In metastatic lesions of gonorrhœa, a positive reaction may be expected in practically all cases. The reaction is positive also in the cases of patients who

have previously received injections of gonococcus vaccine.

As a rule the reaction continues to be positive for from two to five months after clinical cure.

With regard to the specificity of the reaction in cases of serum positive lues, the author believes that onlyluetics who had a gonorrhœal infection previously have a frankly positive complement-fixation reaction for the gonococcus.

In conclusion, Sommer advises routine serological tests for the gonococcus in cases of gynecological inflammation.

WALDEYER (G)

Vidakovič, S. The Gonococcus Complement Reaction in Gynecological Inflammatory Diseases (Go-Komplementreaktion bei den gynaekologischen entzündlichen Erkrankungen). *Liječ vjesnik*, 1933, lv, 408.

Up to the present time the gonococcus complement reaction has seldom been employed in gynecology although it may be of value in the differential diagnosis in many instances of pelvic inflammatory diseases. A differential diagnosis between puerperal septic, tuberculous,luetic, and gonorrhœal infections on the basis of the history, clinical findings, and pelvic examination is often very difficult. In chronic gonorrhœa, microscopic examination of the cervical and urethral discharge is usually negative whereas the gonococcus complement reaction is positive. Siegert-Schultze and Bruehl obtained a positive gonococcus complement reaction in 75 per cent of their cases, while Bucura, using his method of withdrawing and testing blood from the portio and the venous circulation, made a correct diagnosis in from 90 to 100 per cent of his cases.

In the author's chronic cases the blood taken from the portio gave a somewhat stronger reaction than the venous blood. In some cases the reaction of portio blood was positive when that of the venous blood was negative. In no instance was the reaction of the venous blood stronger than that of the portio blood. The test for syphilis was made at the same time. In four of seventy-five cases the complement reaction was positive, a finding of great importance in the treatment. In one group of cases in which, although gonorrhœa was strongly suggested both clinically and by the findings of palpation, the gonococcus complement reaction was constantly negative and the condition resisted all forms of conservative treatment, operation revealed tuberculous salpingitis. It is emphasized that the gonococcus complement reaction was negative in many cases with clinical findings suggesting gonorrhœa. In such cases further investigations are necessary.

(G)

Léo, G. Observations on Parasitism in Gynecology (Notes sur le parasitisme en gynécologie). *Revue franç de gynéc et d'obst*, 1933, xxxiii, 834.

Three common gynecological diseases caused mainly by parasites are described. The author first reports ten cases of dysmenorrhœa due to helmin-

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thiasis. Some of these cases were under observation for a number of years. Most of the women showed the characteristic symptoms of intestinal parasitic infestation. Some of them had nervous symptoms such as headache, giddiness, in omnia and picking of the nose. The others consulted the author because of gastro-intestinal symptoms especially foul breath, salivary and anal discharges, itching about the anus. Some of them had a pale or sallid skin and sunken eyes. The parasites found were the ovals or ascariis or both. In one case the blasto-testinal trichomonas, the lambdoid form of intestinal trichomonas, was discovered in the stools. The severe dysmenorrhoea was either relieved or cured by the administration of anthelmintics and cathartics.

The author next discusses infestation with trichomonas. He cites Riff who claims that the trichomonas vaginalis is incapable of injuring normal vaginal epithelium but in the presence of even microscopic lesions of the vaginal mucosa it causes the trichomonas vaginitis which is characterized by a profuse watery, yellowish and frothy discharge.

This discharge produces multiple erosions and sometimes even papulomatous growths of the vaginal wall. The trichomonas also causes persistent pruritus vulvae. Colte claims that nine of ten cases of vulvar pruritus are due to it. The parasite may even invade the cavity of the uterus.

Schmid and Hanniker find that pregnant women harboring the trichomonas in the vagina have a high postpartum morbidity. Therefore it is advisable to examine the vagina for trichomonas before every confinement and every gynecological operation. The best treatment is the application of a 50 or 100 per cent solution of silver nitrate twice weekly.

For all persistent cases of vulvovaginitis in children the author advocates the use of a vermifuge because this infestation is often aggravated by a subinfestation with oxyuris vermicularis. He cites two cases of severe vulvovaginitis with gastrointestinal and nervous manifestations in girls six and three years of age. In these cases a vermifuge not only cleared up the discharge but also relieved the general symptoms.

ISAAC ANDREWS, M.D.

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Jonas, A. F., Jr. An Evaluation of Signs and Symptoms in the Diagnosis of Extra-Uterine Pregnancy. A Review of Ninety Cases. *New England J. Med.*, 1933, CCIV, 1324

Ectopic pregnancy occurs slightly more often in the right tube than in the left

The most constant and important symptom is pain. In the typical case, irregular colicky pain in the lower abdomen occurring over a period ranging from hours to weeks or a mild sense of distress or discomfort is followed by severe pain of sudden onset. The severe pain is sharp and knife-like, colicky, or of a bearing-down character like the pain of labor. Radiation of the pain is infrequent.

Although most textbooks state that amenorrhœa is a feature of the condition, bleeding occurred at some time in 90 per cent of the cases reviewed. The blood was usually fresh, and occasionally there were gushes of bright red blood. The bleeding often resembled the normal menstrual flow.

Vomiting distinct from that of morning sickness occurred in about one-fifth of the cases. Tenderness in the hypogastric region, vaginal tenderness, and pelvic masses were present quite regularly.

In the acute cases, that is, those operated upon within forty-eight hours, the onset of the acute pain was usually marked by recurrence or an increase of the flowing. The pain was often excruciating and there was marked tenderness. Examination seldom revealed a palpable mass, but disclosed spasm and frequently shifting dullness. Signs of acute blood loss, such as air hunger, a rapid pulse, sweating, and apprehension, were limited to this group of cases. The white blood-cell count was considerably elevated, varying from 9,000 to 37,000 and averaging 18,200. There was usually a slight rise in the temperature.

CHARLES F. DuBois, M.D.

Fikentscher, R. Investigations of the Porphyrin Content of Human Amniotic Fluid (Untersuchungen ueber den Porphyringehalt des menschlichen Fruchtwassers). *Arch. f. Gynaek.*, 1933, cliv, 129.

The increased occurrence of porphyrin during fetal life and its relationship to the growing organism, the presence of coproporphyrin in the meconium, and the affinity of uroporphyrin for developing bone have attracted the attention of obstetricians. Since porphyrin can be demonstrated in the amniotic fluid of animals, the question arises whether it is present also in human amniotic fluid and, if so, in what concentration and at what periods of gestation.

For making quantitative determinations the author has developed a special method based upon

measurement of the luminescence. The determinations made with the photometer (Stufenphotometer) are of importance because of the low concentrations. The prerequisites of the method and its sources of error are discussed, and a description of the technique is given. One hundred and twenty qualitative and 107 quantitative determinations were made.

A porphyrin pigment could be demonstrated qualitatively in human amniotic fluid. It was identical with coproporphyrin. A search for other porphyrin compounds was unsuccessful. The content of porphyrin varied definitely during the course of gestation. At the beginning of embryonic development it could not be measured, and at the end of gestation, no porphyrin could be detected in the majority of cases. The highest concentration was found approximately at the middle of gestation. Computation of the absolute content in relation to the amount of amniotic fluid showed that the total amount also undergoes a relative decrease during the last months of pregnancy. The studies appear to show that porphyrin does not have its origin in the fetal urine. Its source, fate, and role are not yet explained.

GUENTER K. F. SCHULTZE (G.)

Slobozianu, H., and Herscovici, P. Placental Transmission of Gonococcal Infection to the Fetus (La transmission diaplacentaire de l'infection gonococcique chez le fœtus). *Gynec. et obst.*, 1933, XVIII, 601.

In the literature on the problem of heredity of infections no mention is to be found of placental transmission of gonococcal infection. However, there are reports of cases which demonstrate a congenital transmission of this infection and afford an explanation of a series of disorders that would otherwise remain unexplained.

In 1911, Leidenius reported the case of an infant ten days old who suffered from gonococcal arthritis with gonococci in the articular fluid. The child had no ophthalmia nor any other mucosal localization of the infection. The mother had gonococci in the lochia.

In 1924, Finkelstein, citing the works of Noortrom, Lind, and Vasseu, admitted that, in rare instances, a gonococcal pyæmia might be transmitted to the infant during intra-uterine life.

In 1925, Fischer reported a case of gonococcal arthritis without an evident portal of entry and admitted a placental transmission.

Knauer, in 1925, reported a case of gonorrheal rheumatism in an infant seven days old without ophthalmia or vulvovaginitis. He concluded that in this case the bacteria had passed through the skin.

Hellmann, in 1925, reported the case of a boy born by cesarean section who, four weeks after birth,

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developed a very severe form of gonococcal polyarthritides which terminated fatally. The portal of entry could not be discovered. Is the mother did not have an evident gonococcal septicemia placental transmission was not considered.

In an infant twelve days old Kostitch Jolstich in 1920 discovered a gonococcal polyarthritides out other gonorrheal localizations. The urethral secretions of the mother showed gonococci. Besides pyemias with clinically evident septic foci such as arthritis pregnant women may suffer from transitory bacteremias that pass unperceived and yet are capable of infecting the fetus.

Fohl believes that the fetus may become infected by penetration of the gonococci from the vagina into the amniotic fluid by way of the fetal membranes. Besides the early arthritis of infants a late gonorrheal arthritis may become manifest at a late age of about three months. In 1906 Illoft observed quite an epidemic of gonococcal arthritis (twenty-four cases) in a children's hospital. Although no gonococci could be demonstrated in the mouth he was of the opinion that the infection occurred by way of the buccal mucosa. In 1927 Cooperman reported an epidemic of gonococcal arthritis and suggested that the infection may have occurred by way of the rectal mucosa.

Smilya believes that the organisms enter the body by way of the conjunctiva and pass through it without causing ophthalmia. Brentano is of the opinion that gonococcal septicemia is sometimes due to a primary postnatal mucosal infection.

The authors have observed six cases of gonorrheal rheumatism in pregnant women during the last months of pregnancy. Three of the women had children with symptoms of polyarthritides. In two of the cases the child had no ophthalmia or other localization which might have served as a portal of entry. In the third case the occurrence of very severe septicemic symptoms during the first days of life simultaneously with the development of ophthalmia led the authors to conclude that the polyarthritides was related to the rheumatism of the mother rather than to the ophthalmia. Three cases are reported in detail. In the first case the mother developed a gonorrheal arthritis four days before delivery and the condition progressed in spite of a month of treatment. The infant born at term was congenitally weak (hypothermia, scleroderma and loss of weight) but had no ophthalmia. Twenty days after birth it developed polyarthritides and on the twenty-fifth day after birth it died. Gonococci were found in the pus of the articulations.

In the second case the mother developed monarticular gonorrheal rheumatism two weeks before delivery. The infection developed without fever. On the tenth day after birth the infant developed polyarthritides without severe local involvement without serious involvement of the general health. There was no ophthalmia.

In the third case the mother developed febrile gonorrheal polyarthritides during the

last month of pregnancy and the condition continued until delivery. On the third day of life the infant developed gonorrheal ophthalmia with high fever and severe general involvement. A febrile gonococcal polyarthritides developed on the eighth day and began to improve on the twentieth day.

From these cases it appears that there is some relation between the severity of the infection in the mother and the infection developing in the infant. After birth there was a period of pure gonococcal septicemia without metastatic localization which lasted eight ten and twenty days in the three cases respectively. In Case 2 in which the infection in the mother and child was benign this phase remained latent. In the two other cases it was characterized by fever and loss of weight. This initial period is followed by a stage of multiple metastases (arthritis abscesses) during which the general condition becomes more grave. One of the infants developed a choleliform syndrome ending in death. If new articular attacks do not supervene the fever subsides and the general condition improves.

EDITH SCHLACHTER MOOSK.

Boschetti M. Y Ray Diagnosis of Intra Uterine Death of the Fetus (Sulla diagnosi di morte in utero del feto). *Riv. Ital. di G. e O.* 933 447

The author's experience in the diagnosis of intra uterine death by means of the Spalding sign is especially satisfactory. The sutures has not been particularly satisfactory. He mentions that Kehrner and others are also convinced that this sign is not infallible.

Three cases with numerous roentgenograms are presented for the purpose of evaluating the changes occurring after fetal death. The following changes were noted: (1) deformity of the fetal skull (2) atypical fetal attitudes and (3) rigidity and torsion of the spinal column.

Deformity of the fetal skull especially dislocation or subluxation of the cranial bones at their respective articulations was found to be the most reliable sign. The author attaches considerable importance to this abnormality whenever it appears in the roentgenogram but states that its absence does not prove the fetus to be still alive. GEORGE C. FINOLA, M.D.

Dieckmann W. J. and Wegner C. R. T. Blood in Normal Pregnancy. *J. Blood and Plasma* Volume 4 477-484 1934 July 11

Previous reports on the blood and plasma volumes in pregnancy are at variance with each other and are inconclusive because of the difference in the methods used and the calculation. The volumes are reported in cubic centimeters per kilogram or in percentage of body weight either of which is unreliable because of the constant change in the weight in pregnancy.

The authors made determinations of the blood and plasma volumes in various groups of women in different periods of pregnancy. The number of cubic



centimeters per kilogram and the means for the different periods were calculated. Although there is a slight increase at term, statistical analysis indicates that the changes are of no significance.

The findings of similar studies in which the same women were followed throughout pregnancy and the puerperium are summarized as follows:

1 The blood and plasma volumes begin to increase in the first trimester. By the thirteenth week the gain amounts to 16 and 18 per cent, respectively.

2 At term, the average increase in the blood volume is 23 per cent, and the average increase in the plasma, 25 per cent. This change is designated as an "oligocythæmic hypervolemia." Although the increase seems large, losses of 700 c cm or more of blood are at once manifested in measurable reductions in volume. The pregnant woman survives losses of blood which would be fatal to the non-pregnant woman, partly because of the increase in blood volume, but more particularly because of the tremendous amount of fluid in her tissues.

3 Light weeks after delivery there is an average decrease of 16 per cent in both the blood and the plasma volume. This does not quite equal the increase, but as most of the women weigh more after pregnancy, the discrepancy is explained.

4 The increase in the blood and plasma volume is not merely to fill vessels, but probably a part of the mechanism required to permit proper fetal respiration.

Browne, F J. The Early Signs of Pre-Eclampsic Toxæmia, with Special Reference to the Order of Their Appearance and Their Interrelation. *J Obst & Gynec Brit Emp*, 1933, 11, 1160.

Browne reports a study of 320 toxic patients observed in the course of a year in the clinic and antenatal ward of the University College Hospital, London. Hypertension (130/70 or over) was the earliest sign in 75 per cent of these cases and the sole evidence of toxæmia in 56 per cent. Edema was the earliest sign in 43 per cent and albuminuria the earliest sign in 3 per cent of the cases. Hence, while hypertension is the earliest sign in the majority of cases, it does not necessarily precede the other manifestations and the evidence does not prove that it is the cause of either edema or albuminuria. A more or less prolonged interval of normal readings is considered by Browne a warning of future permanent hypertension.

HENRY S. ACKEN, JR., M D

## LABOR AND ITS COMPLICATIONS

Ssolowjew, W. Manual Removal of the Placenta. (*Über die manuelle Placentaförsung*) *Monatsschr f Gebirsh u Gynaek*, 1933, 70, 34.

A comparison of present day statistics with old statistics shows that the mortality after manual removal of the placenta has fallen from between 10 and 14 per cent to between 1.5 and 2 per cent. The

morbidity, however, is still high, from 20 to 30 per cent. The decrease in the mortality is doubtless due to the fact that in former times manual removal of the placenta, because of its danger, was performed almost exclusively in the cases of exsanguinated and moribund women. Moreover, in the computation of the mortality neither the condition of the patient nor the associated operation with its own mortality rate were taken sufficiently into account.

The author has collected statistics from Russian clinics concerning the frequency of manual removal of the placenta during the period from 1883 to 1918 and from 1919 up to the present time. In the first period the placenta was removed manually in 2,912 (0.95 per cent) of 304,192 deliveries, and in the second period in 2,527 (1.4 per cent) of 179,717 deliveries. The majority of Russian obstetricians ascribe the frequent practice of manual removal of the placenta to the frequency of abortion in the United States of Soviet Russia (damage of the uterine musculature, destruction of the uterine glands, infection of the uterine cavity). In the author's opinion, an equally important cause is the increasingly active management of the third stage of labor.

In a series of tables arranged according to different points of view, the author presents his own statistics on manual removal of the placenta performed in 150 (2 per cent) of 7,470 deliveries occurring during the years from 1926 to 1931. He found that the factors which increased the incidence of manual removal of the placenta included (1) previous abortions, (2) increased age of the women, (3) the number of antecedent pregnancies, (4) operative delivery (manual removal of the placenta was done in 23.4 per cent of the operative deliveries and 6.6 per cent of the spontaneous deliveries in the home), and (5) premature delivery. While manual removal of the placenta appeared to be indicated in 2.35 per cent of the entire number of cases, it was required in the cases of 10 (6.6 per cent) of the elderly primiparæ, 14 (9.4 per cent) of the cases of twin pregnancy, and 9 (6 per cent) of the cases of placenta previa. The postoperative course was normal in 71 cases (48.5 per cent). It was much better in uninfected cases in which delivery occurred spontaneously at the clinic than in cases of operative delivery at the clinic, and was poorest in cases in which mortality was 5.5 per cent (8 deaths), and the net mortality 2 per cent (3 deaths). The author deduced 1 case each of typhus, croupous pneumonia, and sepsis in which the disease was present at the time of the woman's admission to the clinic and constituted the indication for the manual removal of the placenta. He deducted also the cases of 2 women who came to the clinic in a state of complete exsanguination and died respectively twenty and seventy minutes after manual removal of the placenta. Of the remaining 3 patients, 1 died of embolism and 2 of sepsis.

Manual removal of the placenta is a dangerous operation. Therefore the indications must be estab-

## INTERNATIONAL ABSTRACT OF SURGERY

handled carefully. The primary indication is hemorrhage. In the absence of hemorrhage in cases of retention of the placenta the period of expectancy should be prolonged.

## PUERPERIUM AND ITS COMPLICATIONS

Bohdanowicz Z and Jasiński T. Anaerobic Bacteria in the Blood in Puerperal Infections (Anaerobic in the Blood in Puerperal Infections). *Ginek* 1933, 45:4

The authors made a bacteriological study of the blood according to the method of Boez in ninety one cases of puerperal sepsis. In seven cases—in three of which the condition followed delivery and in four of which it followed abortion—the perfringens (Welch Fraenkel) bacillus was found. In one case the bacillus porogenus was found. In addition bacteriological studies for anaerobic bacilli in these cases revealed the staphylococcus albus and the

streptococcus hemolyticus in one case each. In the cases of infection due to anaerobic bacilli there were no symptoms essentially different from those of analogous infections due to aerobic bacilli. In some cases the presence of the bacillus perfringens in the blood may be the cause of severe disease of a septic character whereas in others it may be only the manifestation of a transitory bacteremia. The method of Boez facilitates also the detection in the blood of bacteria with the characteristic of facultative anaerobes (staphylococcus streptococcus).

The authors employed different methods of treatment. In two cases an attempt at specific treatment was made with intramuscular injections of 50 c.c. of anti perfringens serum. As a cure was obtained in both of these cases in spite of the severe course of the disease the authors believe that treatment with specific serum is indicated in puerperal fever caused by a rotic bacilli.

H. Back (G)

# GENITO-URINARY SURGERY

## ADRENAL, KIDNEY, AND URETER

Henline, R. B. Traumatic Injuries of the Upper Urinary Tract Following Instrumentation  
*J. Urol.* 155, 1934, 611, 1932

The author believes that instrumental rupture of the ureter following intra-ureteral manipulation is less rare than the literature indicates. He reports three cases. Three required surgical drainage and two required nephrectomy because of severe infection of the kidneys. In the remaining four, recovery followed palliative treatment.

In experiments on dogs it was found impossible to rupture a normal ureter by forcible dilatation or by forced syringe injection in retrograde pyelography. When the ureters of three dogs were forcibly ruptured with a silver wire, both retrograde and excretion urography demonstrated extravasation. The ureter of one dog punctured by a fine wire failed to show extravasation in the intravenous urogram. Henline concludes that excretion urography will indicate the existence and extent of gross injury to the ureter and serve as a guide to surgical treatment.

Lichtenberg, A. von Excretory Urography (L'urographie excretrice)  
*J. d. urol. med. et chir.*, 1933, 1111, 157

The author prefers the term "excretory urography" for the method he introduced four years ago to the terms "descending pyelography" and "intravenous pyelography" because the latter do not indicate the nature of the procedure. The method is not merely an anatomical demonstration of the kidney pelvis. It is a true physiological test of kidney function by excretion whether the contrast is administered intravenously, by rectum, or by mouth. The urogram differs fundamentally from the pyelogram obtained by ascending pyelography. The author believes that ascending pyelography should be called "filling urography."

A disadvantage of the rapid acceptance of the author's method has been its use in cases in which it was not indicated. Some investigators have claimed that the contrast medium may not be excreted even by the healthy kidney, but the author maintains that the contrast substance is eliminated by any kidney in proportion to its capacity for elimination. The contrast medium has been found to be eliminated largely by the glomeruli. There is only a slight absorption by reflux of the substance through the tubules. Therefore the test is an excellent one for demonstrating lesions of the glomeruli. After using the method in more than 5,000 cases over a period of more than three years the author is convinced of its value as a test of kidney function.

Excretory urography is indicated absolutely in cases in which filling urography is difficult or impossible for anatomical or technical reasons, in those in which filling urography is negative or the pictures are not clear, and those in which filling urography may aggravate the condition and may be dangerous. It is indicated relatively in cases in which a general view of the whole urinary tract is desired, cases in which information is sought with regard to tonus or a disturbance in the dynamics of the urinary tract, cases of retention in which it is desired to determine the mode of evacuation of the excretory tract, and cases of disease of the adenoma in males and females in which the effect on the urinary tract must be determined.

Excretory urography is not of value for the early diagnosis of kidney tuberculosis is slight defects in filling or in the outline of the calyces may be due to other causes. In advanced cases it shows the extent of the lesions. It is of the greatest importance in non specific affections of the kidney such as acute suppurative and chronic pyelonephritis. Simple changes of tonus can be differentiated from anatomical lesions and definite dilatations. From the condition of the ureter it is possible to tell whether the disease of the kidney is primary or secondary and to establish the indications for operation. The special field of excretory urography is lithiasis, both from the point of view of prognosis and that of indications for conservative operation. In cases of tumor of the kidney the procedure is of value only in conjunction with other methods of examination. In cases of tumor of the bladder it often gives better pictures than cystography because there is no irritation of the bladder by the filling. In cases of retention of urine it is of very great value because it shows not only the anatomical condition but also the nature of the process. Often the retention is due to a functional change brought about by changes of tonus which can be overcome with restoration of normal function. In true hydronephrosis the essential factor is not the sac. The sac is only the manifestation of a compensatory functional process to protect the kidney against inevitable hypertension, it represents the adaptation of the muscle to the changed capacity for elimination of the pelvis. Therefore conservative surgery is possible in this condition. An essential part of kidney retention is a disturbance of innervation. Sometimes normal evacuation can be restored by denervation.

Ravassini, C. Excretory Urography (L'urographie excretrice)  
*J. d. urol. med. et chir.*, 1933, 1111, 404

Ravassini prefers the term "excretory urography" to the term "descending pyelography." Excretory

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urography is an essentially physiological method which in the majority of cases gives valuable information with regard to the anatomical and functional condition of the kidneys. It shows the secretory capacity of the kidneys and the motility of the ureters and pelvis. The indications are limited to serious insufficiency of the kidneys or liver. If the kidneys are functioning well within five minutes after the injection and the bladder within from fifteen to twenty minutes. The greater part of the contrast substance is eliminated in from an hour to two and a half hours. Caution must be used in interpreting spots in parenchyma as these are not conclusive unless they appear constantly. When they are constant they suggest a tuberculous cavity and when they suggest a tuberculous cavity and when they appear with the pelvis. In fifty cases of communicating such spots appeared the presence of a cavity was confirmed by operation.

Lichtenberg and Heckenbach say that the after movement of contraction and dilatation of the pelvis can be seen on the urogram but the author has not observed it. He has noted that there is some times no contrast shadow even when the kidneys are normal. This does not mean that the kidneys are not eliminate the contrast substance it eliminates this substance in proportion to its capacity for elimination. Among the various causes for failure of the kidney shadow to appear are exaggerated diuresis hypertonicity and hiding of the kidney by meteorism. The bladder shadow serves as a control showing that the contrast substance has been eliminated.

From experiments on frogs Hughes and Peterfi concluded that uroselectan is eliminated particularly by the glomeruli. Von Lichtenberg therefore concluded that uroselectan is particularly adapted to the demonstration of lesions of glomeruli. From experiments on rabbits Di Majo concluded that it is eliminated chiefly by the tubules.

The different methods recommended for judging renal function by excretory urography such as the quantitative determination of iodine in the urine are complicated and of no practical value. Deductions in regard to function must be made from the roentgenograms and they are not always reliable. The author reports cases in which the urograms suggested enormous dilatation of the renal pelvis and ureters but operation showed normal conditions. In experiments on the isolated ureter of the dog Mingers found that the ureter reacts to the contrast substances by changes in form and size. Therefore in the interpretation of the urogram it is important to know which was used.

Von Lichtenberg believes that the density of the shadow depends on the degree of kidney function but the author has not found this to be true. He states that the density of the shadow may depend on extrarenal factors. It is important in judging function to know the time that elapsed between

the injection and the appearance of the shadow how long the shadow persisted and when it disappeared. Only a positive kidney shadow has a functional value. If there is no kidney shadow conclusions must be drawn from the shadow of the ureters and bladder. A distinct bladder shadow shows that the kidney is functioning whether the kidney shadow appears or not.

Excretory urography is especially adapted to the study of the late orthopedic and functional results of conservative kidney surgery. Conservative operations on the kidney do not injure but on the contrary improve kidney function.

Excretory urography is particularly important in anomalies of the kidney and ureter. In hydronephrosis it gives a more accurate picture than ascending pyelography and often furnishes indications for conservative operation. Its value in lithiasis is well known. Calculi invisible to ordinary roentgenography may be rendered visible. In renal tuberculosis it is very useful and sometimes indispensable particularly as ascending pyelography is often impossible. Correct interpretation of the roentgenograms requires experience. Details that would escape the eye of the ordinary practitioner are clearly evident to the specialist. In cases of renal tumor the method is often insufficient for diagnosis.

ALFRED GROSS MORGAN M.D.

WARD W. R. Excretory Urography (Lur. 6, page 933, Jan. 1, 1927)

The author has used excretory urography since 1920. It makes possible a study of the activity of the kidney and ureters under conditions that are perfectly normal except for the secretory stimulus resulting from the injection. Care must be taken to prevent pressure on the ureters while the roentgenograms are being taken as it interferes with physiological conditions. The upright position is strictly physiological but as in this position the normal pelvis and ureters drain quickly and the shadows are slight the roentgenograms are usually taken with the patient lying down. It is a good plan to place the patient in the Trendelenburg position for a short time fifteen minutes after the injection and make a roentgenogram then reverse the position with the feet down and make another roentgenogram five minutes later.

Of the serial roentgenograms those taken five minutes after the injection are the most valuable for general information. The normal calyces and pelvis are visible at this time. Absence of a shadow indicates retardation of excretion. If there is partial stasis the most intense shadow is seen after half an hour. Slight and changing shadows appearing early and disappearing early are an indication of normal function. Dense shadows constant in form are not normal they indicate normal secret on but interfere with evacuation. Shadows that appear late indicate interference with secretion. A ureter filled throughout its length indicates loss of tone.

The method is particularly valuable in cases of calculus, hydronephrosis and tuberculosis

In the discussion following the reports of Von Lichtenburg, Ravasini and Ward, LASIO said that descending urography is of great value only in cases of quite marked morphological changes. In the early stages of tuberculosis and tumor the pictures are not sufficiently clear for diagnosis. The procedure shows whether a kidney is functioning but not whether it is capable of taking over the function of the other kidney. Separate examination of the urine from the two ureters is necessary for this.

DOS SANTOS stated that excretory urography is the first method of urological examination that should be used systematically. It gives information regarding the morphology and function of the kidney which is sometimes sufficient to establish the prognosis and indications for operation. However, as the picture depends on elimination, it may not be sufficiently clear if elimination is abnormal. Under the latter condition, ascending pyelography may be necessary. For finer details of function it may be necessary to use chromocystoscopy, phenol-sulphonphthalein, and catheterization of the ureters. However, the systematic use of excretory urography greatly limits the necessity for ascending pyeloscropy and catheterization of the ureters. A valuable supplementary method is arteriography by the injection of uroselectan or abrodil into the aorta, which gives a picture first of the abdominal aorta and then of the kidney pelvis.

CHEVASSU emphasized that, in spite of the great interest in excretory urography, this procedure cannot replace the determination of azotemia, the determination of the constant, and catheterization of the ureters in the study of the function of the kidney, or ascending pyelography in the study of the anatomy of the kidney.

LEPOUTRE said that excretory urography is extremely valuable when it is positive. It may show a hydronephrosis, a ptosis or abnormality of the kidney with much less difficulty and chance of error than ascending pyelography. When it is negative, that is, when it does not produce a shadow on the painful side, ascending pyelography must be used. It is of great value in renal tuberculosis if its results are interpreted with care. In cases in which catheterization of the ureters is impossible it may render a double exploratory lumbar incision unnecessary. In cases with a poor constant it may confirm the existence of bilateral lesions and show the nature of the changes in the two kidneys.

BRUNI stated that excretory urography does not take the place of other methods of examination of kidney function. While it is not dependable in early tuberculosis, it is of value in cases in which catheterization of the ureters is impossible as it permits diagnosis without exploratory incision.

PASTEAU said that excretory urography is an excellent exploratory method for determining what later methods of examination are necessary. The

time of appearance and disappearance of the shadow gives valuable information in regard to the secretion of the kidney, and the way in which the shadow of the pelvis and ureter disappears shows the conditions of excretion in kidney and ureter. Theoretically it should be superior to ascending pyelography, but sometimes the shadows are too pale.

OECONOMOS reported that in 80 per cent of cases excretory urography gives a more or less distinct picture of the kidney, pelvis, and ureters, but the picture is not so clear as that produced by ascending pyelography. It shows disturbances of elimination rather than secretion of the kidney, for if secretion is normal and excretion is interfered with the pictures are very clear.

CASPER stated that excretory urography cannot be substituted for ascending pyelography and is not always reliable as an indicator of kidney function. In cases in which elimination is interfered with the shadow may be very dense when the kidney is seriously diseased, and if the pelvis is insufficiently closed so that it is always empty there may be no shadow when the kidney is normal. If the picture is taken during systole of the pelvis the pelvis will appear very small, whereas if the picture is taken during diastole there may be no excretion of the opaque substance though the kidney is normal.

BEER said that excretory urography does not give as clear pictures as ascending pyelography. It is necessary in cases in which cystoscopy and catheterization are impossible and may be of value in clearing up certain obscure abdominal conditions.

CRFENTES emphasized that a great deal of the value of excretory urography depends on the interpretation of the urograms. The most valuable roentgenogram is the one taken five minutes after the injection.

PASCUAL discussed the indications for excretory urography in renal tuberculosis on the basis of 289 roentgenograms taken in 163 cases.

PASCHIS presented urograms of cases of pyelitis, nephrolithiasis, and cystic dilatation of the ureter.

AUDREY GOSS MORGAN M D

Chabanier, H., and Lobo-Onell, C. Elimination Urography and Comparative Estimation of the Function of the Two Kidneys (Urographie d'élimination et exploration fonctionnelle comparée des reins). *Presse méd.*, Par., 1933, xli, 2010.

This article is a discussion of the question whether intravenous pyelography meets all requirements for the determination of the comparative function of the two kidneys. As a rule the function of the kidneys is estimated by comparing (1) the pyelo-ureteral shadows (von Lichtenberg), and (2) the time of appearance and disappearance of those shadows (Ravasini).

In the authors' opinion the method is open to numerous objections. The two chief objections to it are based on the following facts: (1) the concentration of the opaque substance is influenced by anything interfering with the flow of urine (e.g., ob-

The authors conclude that:

The authors conclude that when ureteral catheterization is practicable it should be done especially as it makes bacteriological information available at the same time.

Information available  
MARSH W POOLE MD

Me tz H O and Ham r H G The Lateral  
Urolog am An Investigation f Its Value In  
Urolog cal Dagno J L I 934 xx 23

In urological diagnosis the authors make a lateral pyelogram to obtain information supplementing that yielded by the anteroposterior film. Standard pyelographic media and methods of injection are used.

Satisfactory lateral pyelograms permit a study of the vertical position of the kidney, disclose any rotation or anterior-posterior displacement of the kidney and show the outline of the pelvis and the course of the upper part of the ureter as it enters the pelvis. They often lead to a more complete understanding of the pathologic changes present and occasionally confirm a differential diagnosis which would otherwise remain doubtful.

HENRY L. SANFORD, M.D.

Taylor W N Carbuncle of the kidney A  
S 933 xx 55  
Taylor reports

Taylor reports a case of a bundle of the kidney and describes the condition as metastatic hematogenous localized renal infection. The condition is practically cured by the use of penicillin.

The condition is practically always closely associated with an infection of the blood stream as a focus of secondary infection. In 70 per cent of the reported cases it was thought to be attributed to a respiratory or dental infection.

It is practically always due to the staphylococcus aureus. Pathologically the lesion is primarily one of multiple foci of infection of the interstitial tissue of the kidney. The treatment is surgical.

HARRY W PLA GEMEYER M D

BLADDER URETHRA AND PENIS

110101 mei N and Katz Galat T A Contribu  
tion to the Study of Urethrography (C ntr b  
t al etud d l th r phe) J d l ed  
1 k 933 3

The author states that urothorgraphy is capable of giving much information that cannot be obtained by ordinary methods of urethral examination on such as the use of bougie and sounds and urethroscopy examination. The contrast medium must be sufficiently radiopaque to give adequate visualization eliminable by the normal channels miscible with urine easy to prepare and nontoxic. It must be a suspension which forms a precipitate. The substances best meeting these requirements are thorotrast and uroselectan.

The urethrograms are made by two methods the ascending and the descending. In the descending method the dye uroselectan is given intravenously and when the patient experiences a desire to urinate the bladder flows out. This is done with the patient in the lateral position so that the dye accumulated in the surface of the plate. The legs are so arranged that they will not overshadow the urethra. In the ascending method the uroselectan is introduced into the penis under gentle but definite pressure. No automatic devices are employed. When exploration of the anterior urethra is desired the fluid is introduced under a pressure which is not sufficient to overcome the resistance of the sphincter. When the posterior urethra is to be explored a somewhat higher pressure is employed. When the proper interpretation of the results is desired a somewhat

Proper interpretation of abnormal images requires a knowledge of normal variations and considerable experience. When the bladder is emptied the shadow will be found pear shaped. The posterior urethra dilating to form the small end of the pear. When the injection is given from below the moderate pressure will cause a dilatation of the bulbous urethra and because of its normal tonicity the posterior urethra will be completely free from fluid. Alteration of these pictures usually indicates pathological changes. Urethrography is of value in the study of urethral strictures, false passages, dilatation and diverticulæ, urethral calculi, abscesses of the urethra, prostatic Conner's glands and seminal vesicles and urethral fistulae.

of suspected structure even before the use of filiform bougies

JOHN W. EPT & M.D.

GENITAL ORGANS

[illegible]

The author calls attention to the gravity of small d verticula in the prostate resulting from infection of the ureters and kidneys. He believes that such d verticula can give rise to entrapment of the ureters resulting in dilatation of the ureters and kidneys. The d verticula are generally due to venereal infections which do not result in true prostatic

abscesses but cause such destruction of prostatic tissue that small cavities are formed. In some cases they are due to infection secondary to some other focus. Whatever the source of the infection, drainage usually occurs through tortuous pathways and is inadequate. Under such circumstances secondary infection is very common, and with it the prostate becomes swollen and the prostatic urethra narrowed and tortuous. When the infection persists, the entire prostatic area becomes hypertrophied and sclerosed. The seminal vesicles are involved in the process and become the site of infectious foci.

The symptoms are those of chronic prostatitis with polyuria, burning on urination, a morning drop, and symptoms due to the backing up of urine. The diagnosis is established by cysto-urethroscopy and urethrography. Anteroposterior, right oblique, and left oblique roentgenograms should be made. They sometimes show the prostate to be shot through with diverticula which give it the appearance of a bunch of grapes.

The author advises operation for this condition before it results in the serious consequences described.

JOHN W. EPTON, M.D.

Caulk, J. R., and Patton, J. F. Postoperative Complications in Transurethral Surgery. *J Am M Ass*, 1934, 60, 117.

By means of a thermocouple placed in various media and in the prostate glands of men and animals the authors measured the heat produced in the proximity of the various types of high-frequency currents used in transurethral surgery of the prostate and compared it with the heat produced in the tissues adjacent to a cautery punch used similarly. Their findings showed that the heat of conduction

from the cautery is insignificant while the induced heat produced between the two electrodes of a high-frequency current is sufficient to cause tissue death for a considerable distance from the loop. These findings were confirmed by histological examination.

The authors give statistics demonstrating that complications are more frequent and the mortality is somewhat higher in cases treated by transurethral electrosurgery than in those treated with the transurethral cautery punch. They conclude that the instrument using a cautery current is the safest, and that the high frequency apparatus must be changed or discarded.

THEOPHIL P. GRAUER, M.D.

Ferguson, R. S. Pathological Physiology of Teratoma Testis. *J Am M Ass*, 1933, 61, 1933.

The author discusses the quantitative secretion of Prolan A in cases of tumor of the testicle. The urinary excretion of Prolan A is determined by three factors: (1) the embryonal characteristics of the tumor, (2) the stage of the disease, and (3) the resistance of the disease to therapy.

From the estimated number of units in the urine, the type of tumor may be determined. In cases of embryonal carcinoma, the urine contains from 2,000 to 10,000 mouse units, in cases of seminoma, from 400 to 2,000 mouse units, and in cases of adult teratoma, from 50 to 500 mouse units. In cases in which the excretion of mouse units is not affected by surgery or X-ray irradiation the prognosis is unfavorable, whereas in those in which the units decrease and subsequently disappear, good results are to be expected.

Prolan A is believed to be produced by the basophilic cells of the anterior lobe of the pituitary gland.

J. SIDNEY RITTER, M.D.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES JOINTS MUSCLES TENDONS ETC

Elliott G R Chronic Osteomyelitis Presenting as  
Distinct Tumor Formation Stimulating Clinically True Osteogenic Sarcoma J Bone & Jt 1934 xiv 137

With few exceptions osteomyelitis in early childhood is diagnosed readily. Difficulty in the diagnosis is encountered usually only when the condition occurs in later life. The perplexing cases are those of rather slowly growing sarcoma and sclerosing osteomyelitis.

The author reports a case of a borderline condition which because of the marked plasma cell reaction Ewing believed to be a chronic inflammation and described as an osteomyelitic plasma cell myeloma. The importance of a very complete clinical history and a good roentgenogram properly interpreted is emphasized. Occasionally biopsy is necessary although it is generally believed that biopsy should be avoided if possible. Biopsy should be done by the aspiration method or the punch method.

NORMAN C. BUTLOCK M D

Oberzimmer J The Formation of Circumscribed Necrosis and Sequestra in Osseous Tuberculous (Forma one di necrosi e sequestra in osseous tuberculo) Ch d org di movim 1933 xiii 37

Whereas in pyogenic osteomyelitis the formation of sequestra may be considered a sign of resolution in osseous tuberculosis it is a part of the pathological process. In osteomyelitis it is the healthy tissue of regeneration which determines the demarcation and termination whereas in tuberculosis this is the disease. Therefore it is apparent that in tuberculous the formation of sequestra has nothing to do with the healing of the focus but represents a phase of the development of the disease.

The author reports twelve cases of osseous tuberculosis in which large sequestra were formed. While in most of them the condition was studied only by roentgen ray examination in a few surgical treatment was given and the tissue was examined. The majority were cases of caseous tuberculosis. This form of tuberculosis of bone produces not only large foci but also cuneiform necrotic areas similar to long bone such as the head or lower end of the femur. The cuneiform foci are subchondral and usually represented by a more or less regular triangle with its base toward the articular surface and its apex toward the bony diaphysis. Occasionally the foci are

The genesis of these necrotic areas is not definitely understood. The morphological findings suggest a rather acute process. If these areas represented true infarcts there would be emboli in some of the vessels or so obliterating endarteritis would be found. The findings are not constant. The clear osseous structure of the circumscribed foci may be explained by the rapid cessation of the involved area long before the granulation tissue has had an opportunity to destroy the bony trabeculae. In the stage during which the necrotic zone retains its connection with the surrounding tissue the patient usually does not consult the surgeon as there are no symptoms. As a rule symptoms develop only when the joint surface is involved. In the development of the process an area is surrounded by tissue which is capable only of destroying bone and not forming it. The two areas then become very rapidly demarcated. This demarcation but not complete separation of a necrotic focus. The focus undergoes gradual resorption but as the process may require many years healing may take place before complete disappearance of the granulation tissue becomes replaced by a healthy osteogenetic properties. This is manifested in the roentgenogram by intensification of the clear endosteal zone. The necrotic bone serves as a focus for new bone growth. In this way repair seems to start. The entire process may be easily followed in the roentgenograms included in the article.

In the treatment of the condition the location and nature of the process must be considered. Conservation should be the rule unless there has been a disturbance of the joint surface. Resection of the joint may be done to hasten recovery and rehabilitation for economic reasons. Relieve pain and reduce the chance of secondary tuberculous lesions.

A LOUIS ROSE M D

Allend G Bone Syphilis in the Second Period of Childhood (La sifilide en la infancia) Arch (anc) 1933 lvi 6

The author reports seven cases of bone syphilis in children from five to thirteen years of age and supplements the reports with photographs and roentgenograms. These cases differed in many respects almost all of them the syphilis was acquired in infancy. The lesions corresponded to those of tertiary syphilis in the adult. Three of the patients had a diffuse hyperostotic osteomyelitis. One had a syphilitic gummatous osteomyelitis. One had arthritis described by Fournier and one had a whitish swelling with enormous enlargement of the joint and suppuration.



tion but no bone lesions demonstrable on roentgen examination. One of the cases showed the leopard-skin roentgenogram of the epiphyseal form described by Lance and Huc, but the condition had invaded the epiphysis, the metaphysis, and the joint cartilage, resembling a malignant bone tumor.

The lesions at this age are most apt to be localized in the metaphysis and cause disturbances of growth. In the cases in which the joint cartilage was affected there was an increase in the length of the bone, and in two cases in which the tibia was affected without involvement of the fibula the tibia was very much curved and there was a marked pes valgus. In one case of syphilitic hyperostoses the length and thickness of the tibia were enormously increased.

Sequestra were formed in a number of cases. Adenopathy was rare. It is generally caused by secondary infection. This is a point usually differentiating the condition from osseous tuberculosis. However, cases of true syphilitic scrofula with bone lesions have been described. One of the cases reviewed by the author was an example of this condition. As the Wassermann reaction remained negative there was doubt as to whether the condition was syphilis or tuberculosis in spite of the tendency toward eburnation of the bone. In such cases biopsy of the glands is of great aid in establishing the diagnosis.

Suppuration occurred in five of the seven cases. In most reports it is described as abscesses due to the breaking down of gummata which have no tendency to spread, a characteristic differentiating them from tuberculous abscesses. However, in some of the author's cases there were enormous abscesses with frank fluctuation and migration to the thigh. In one case they had their origin in an arthritis of the hip. Most surgeons advise against operation for these abscesses, but the author finds that surgical evacuation improves the general health and shortens the time required for recovery. The serological reactions are frequently negative in these cases.

As a rule potassium iodide, bichloride of mercury, and sulfarsenal were used in the treatment. In some cases bismuth and neosalvarsan were employed.

AUDREY GOSS MORGAN, M.D.

Aguilar, J. G., and Maruri, C. A. Bone and Joint Syphilis (Sífilis osteoarticular). *Arch. de med. ciruj. y especial*, 1933, xiv, 1403.

This article is based on a series of eighteen cases of syphilitic arthritis and thirty-six cases of osseous syphilis.

Two pathological processes, destructive and constructive, are combined during the development of gummata. The granulation tissue of the gumma infiltrates the bone, causing necrosis. At the same time the surrounding tissue is stimulated to produce new bone. The surface of the diseased bone thus appears irregular, roughened, and eroded, and the bone as a whole may be larger than normal. If the entire bone is involved, it may become hardened and thickened. As a result of excessive absorption

osteoporosis may result. The abnormal fragility—osteopsathyrosis—may result in fractures.

Among the cases reviewed there were twenty-five of acquired and eighteen of congenital syphilis. In both congenital and acquired syphilis periostitis frequently develops during the eruptive stage. It may occur simultaneously in many bones. Gummatus periostitis developing in the late stages of syphilis is characterized by chronicity and the size which the lesions attain. Large ulcers which discharge a mucoid, foul-smelling pus follow the regressive changes in these lesions. The surface of the bone may be denuded, and even dead bone may appear in the floor of the ulcer. Gummatus osteitis is frequently secondary to periostitis. An entire bone may therefore be completely destroyed.

Syphilis of the joints may be manifested as a synovitis or an osteo-arthritis. In the synovial form there are no characteristic roentgenographic signs. A chronic resistant hydrops may develop. The knee is involved most frequently. There is little interference with motion, and only slight pain.

The lesions of osteo-arthritis are varied. Arthritis may follow the rupture of an intra-osseous or periosteal focus into the joint cavity. Articular cartilage may be destroyed. Flail joints or ankylosis with contractures may develop. They occur most frequently in the fingers and toes, the condition being then often confused with arthritis deformans. In the larger joints the condition may be confused with tuberculosis. Of fifty cases, positive serological reactions were obtained in forty-five (90 per cent).

Treatment with salvarsan and bismuth has yielded very satisfactory results in all cases.

WILLIAM R. MEEKER, M.D.

Peirce, C. B. Giant-Cell Bone Tumor. Some Considerations of Treatment. *Radiology*, 1933, xxi, 348.

The giant-cell bone tumor is a sharply circumscribed central tumor of bone in which large multinuclear giant cells predominate. These cells are distinguished from foreign-body giant cells by the central position of their nuclei. The tumor has a spindle-celled stroma and sometimes cystic spaces containing bloody fluid. Its growth is limited by the epiphyseal line, but after the epiphysis is closed, it may extend to the joint. Malignant degeneration may result from excessive repair activity.

From the standpoint of treatment the giant-cell tumor may be regarded as a benign but progressive metaplasia which may result in disability if it is not eradicated. Biopsy should not be necessary as the diagnosis can be made by roentgen-ray examination. The usual treatment has been curettage and cauterization, but many surgeons do not fully approve of this method. Especially when the bone involved is a weight-bearing bone, complete curettage or the growth may be impossible without interfering with its function. Roentgen therapy has yielded good results in many cases. It is based on the theory that the giant cells are of an undifferentiated or embryonic

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nal type and the irradiation hastens their maturity and death. As a rule there is increased bone lysis for several weeks after the beginning of the treatment. There is no necessity for hospitalization and there is no disfigurement of the limb such as results from surgery.

Of a series of cases reported by Simmons a clinical cure from roentgen ray therapy was reported in 73 to 75 per cent and a clinical cure from surgery in from 63 to 72 per cent. Of the author's seven cases ten were clinically cured—four by roentgen ray therapy alone five by roentgen ray therapy and surgery and one by excision. If surgical attack is thought advisable it should be preceded and followed by roentgen therapy.

WILLIAM ARTHUR CLARK, M.D.

Coley W. B. The Results of Irradiation in the Treatment of Operable Osteogenic Sarcoma of the Long Bones. *Rad. 1933* 31:38

The very low percentage of cures from amputation for sarcoma of the long bones has been very discouraging. Twenty years ago this percentage was only from 2 to 4. More recently there has been improvement in the results due chiefly to earlier diagnosis. The author concludes that these tumors are too resistant to justify irradiation. Early and earlier amputation. When a positive diagnosis cannot be made by clinical and roentgen studies but possibly by bone section, no harm will come from waiting for a definite section.

Although some are including blood and advocate a period of irradiation of three or four weeks while waiting for consultation, a number of serious results from over irradiation of bone tumors have occurred. Several cases are cited. Improvement in the technique of deep roentgen ray therapy and radium irradiation may improve the results but at present the author does not believe that we are justified in substituting irradiation for amputation in early operable sarcoma of the long bones.

Exception is taken to the report of Bartlett on a study of cases in the Registry of Bone Sarcoma in which it is stated that the 29 cases of five year cure from amputation were not cases of typical osteogenic sarcoma. Coley says that by typical Bartlett means only the tumors showing new bone formation radiating at right angles to the shaft then only 8 per cent of all osteogenic sarcomata can be included. He covers Bartlett's list does not include all of the five year cures.

The author reports 4 cases of cure by treatment with radium deep roentgen irradiation and Coley's toxin but all of the tumors were fibrosarcomata of low malignancy some of which did not produce new bone. An analysis is given of 168 cases at the Memorial Hospital New York. In the cases treated by roentgen ray or radium irradiation without amputation there were no five year cures whereas in 129

cases treated by amputation or resection there were 7 such cures. In 4 of the cases of five year cure the humerus was involved and in the 3 the femur. Of 19 cases treated by irradiation and the use of Coley's toxins 4 were cured without amputation and 2 with amputation. The series shows 56 five year cures of sarcoma of the long bones. In 33 the sarcoma was of the osteogenic type and in 23 of the endothelial myeloma type.

In conclusion Coley says that routine irradiation of early operable cases should be abandoned even as a preliminary while awaiting opinions. It is doubtful whether postoperative irradiation will prevent metastases. Coley's toxins and irradiation may cure the less malignant fibrosarcomata and those of the endothelial myeloma type. In cases of inoperable tumors irradiation may retard the growth of the neoplasm and relieve pain. In all others amputation should be performed as soon as a positive diagnosis is made.

WILLIAM ARTHUR CLARK, M.D.

Hough G. De V. Jr. Progressive Pseudo hypertrophic Muscular Dystrophy. *Radiat. 1933* 31:73

Hough reviews his thirty eight cases of pseudo hypertrophic muscular dystrophy and fifteen cases reported by others in which epinephrin and pilocarpin were administered daily. He states that all of his patients showed either subjective or objective improvement while they were under the treatment. However the improvement was most marked in the least advanced cases and in only one case was there any evidence that the progress of the disease had been stopped. Hough therefore believes that the treatment is not curative and must be continued on the duration of life. The improvement in his cases was not sufficient to enable the patient to walk again after the ability to walk had been lost but it greatly improved any function that was left possible. Hough gives daily 0.1 cc. of a 1 per cent solution of pilocarpin and 0.2 cc. of a 1 per cent solution of epinephrin. He admits that a different dosage or the combined use of other methods of treatment might be beneficial.

U. S. COLOMBA, M.D.

LeSage A. Tuberculous Rheumatism. *C. 1934* 3:3

Tuberculous rheumatism is often confused with gouty or gonorrheal arthritis. It is seldom correctly diagnosed. When a spontaneous arthritis develops in a patient has gonorrhea and no other infective arthritis is suggested as gonorrheal. Similarly when arthritis develops suddenly in a tuberculous individual the tuberculous should be held primarily responsible for it. The author believes that an ordinary rheumatism may be the sole clinical and even the sole anatomical manifestation of a tuberculous infection and that its nature may be determined only by experimental

procedures Clinically, a protracted "rheumatic" inflammation of a joint which gradually turns into a tumor albus is tuberculous from the beginning There is no reason to assume that an acute rheumatism which occurs in a person with pulmonary tuberculosis is due to a secondary infection. Rheumatic manifestations following injections of tuberculin are well known

The anatomical and bacteriological proofs of the correctness of this theory of tuberculous rheumatism are found in cases in which there are specific cellular reactions in the joints or aspirated joint fluid yields the tubercle bacilli on culture or guinea-pig inoculation, but the author admits that in the majority of cases these proofs are lacking According to the Lyons School of Medicine, headed by Poncet, the tubercle bacillus may produce simple inflammatory (non-specific) lesions in serous membranes

The manner in which such a tuberculous rheumatism is brought about is conjectural Four theories have been advanced According to one, the condition is due to diffusible toxins, whereas according to another it is produced by adhesive poisons Both of these theories are unsatisfactory According to a third theory, the condition is due to the direct action of the bacillus, and according to a fourth, it is due to the action of a filterable virus

Le Sage believes that tuberculous rheumatism may be due to the action of the bacillus itself, and that in some cases this bacillus produces a non-specific inflammatory reaction He is of the opinion also that there is a virus form which may cause rheumatism and then change very slowly into the bacillary form without causing obvious clinical signs of tuberculous infection This apparently is the explanation of cases of rheumatism which go gradually over into the tumor albus type of joint At this later stage the tubercle bacillus may be found on culture or guinea-pig inoculation of the joint fluid The author reports seven cases which support these conclusions Clinically, tuberculous rheumatism is characterized by local attacks with more or less brief periods of respite and obstinate relapses This may produce chronic arthritis, cysts containing rice bodies, and retraction of the palmar aponeurosis in the hands, three clinical forms of the disease which are often not recognized as being of tuberculous origin

CHESTER C GUY, M D

Brown, L T, and Kuhns, J G Mechanical Instability of the Shoulder Joint in Relation to the Prevention and Treatment of Painful Shoulders *J Bone & Joint Surg*, 1934, XVI, 88

This article is an illustrated discussion of the factors predisposing to muscular, tendinous, and capsular injuries about the shoulder joint The same factors may defeat conservative or operative methods employed to relieve these injuries

The authors emphasize that mechanical instability of the shoulder joint is related directly to poor body mechanics in the thoracic and cervical spines and the thorax as faulty posture allows the shoulder

joint to assume a position that predisposes it to injury and renders treatment of the injury difficult if not unsatisfactory The shoulder girdle is so constructed that when the body as a whole assumes a drooped position the habitual position of the shoulder is one of constant strain on the structures which stabilize the joint

When poor postural habits are corrected, the head of the humerus is held in the glenoid cavity by the ligaments alone and no undue strain is placed on the muscles The glenoid cavity then assumes such an angle that the head of the humerus can rest on its lower lip and thus further relieve the strain on the muscles attached to the greater tuberosity

JAMES K STACK, M D

Ghormley, R K Low Back Pain, with Special Reference to the Articular Facets, with the Presentation of an Operative Procedure *J Am Med Ass*, 1933, CI, 1773

The articular facets must be regarded as the only true joints in the spinal column As they are true joints, hyaline cartilage covers their surfaces and synovial membrane lines their articular capsules The articular capsule is more redundant and loose in the cervical region than in the lower portion of the spinal column The pains are often static that is, they are relieved by certain postures and greatly exaggerated by others

The degenerative changes which occur characteristically in hyaline cartilage may be seen in the articular cartilage of these facets, together with the eburnation of the underlying bony trabeculae This degeneration may go on to complete loss of the cartilaginous surface and irregular hypertrophy of the margins similar to that in advanced stages of degeneration or hypertrophic arthritis of other joints

There is evidence in the literature that, by some, the facets have been regarded as causes of sciatic pain The author believes they cause not only sciatic pain, but also lumbosacral pain with or without sciatic pain Most patients who complain of pain of sudden onset low in the back which is brought on by some activity often trifling in its severity, but usually involving a twisting or rotary strain of the lumbosacral region are probably victims of the "facet syndrome" Proof of these changes is in many instances difficult to secure, but much aid in establishing the diagnosis will be derived from oblique roentgenograms of the lumbosacral region Before operative treatment is decided on, the surgeon must be certain of the joints to be stabilized or the result may be poor The combined lumbosacral and sacroiliac fusion described by the author has proved much more satisfactory than any other type of operative procedure

Freiberg, A H, and Vinke, T H Sciatica and the Sacro-Iliac Joint *J Bone & Joint Surg*, 1934, XVI, 126

Freiberg and Vinke believe that sciatica is rarely caused by narrowing of the lumbosacral space They

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admit that narrowing is frequently observed with sciatica but state that they have found it also in the absence of sciatic pain. They say, "We have thus far encountered no case in which sciatica and narrowed joint space were found without at the same time presenting evidence in the stereoscopic view of the pelvis of arthritis change in the sacro-iliac joint of the painful side. They believe that such an arthritic process probably has a relaxing effect upon the ligaments thus permitting abnormal motion with increased joint limitation and pain and that quite frequently while the instability appears to be of recent origin a study of the history will reveal attacks of back pain of varying severity.

The straight leg raising test which has hitherto been used to demonstrate sciatic pain in connection with the sacro-iliac joint may be more reasonably explained by the fact that the piriformis muscle is the only one which has a very intimate anatomical relationship with the sacro-iliac joint and the sciatic nerve. The authors' anatomical studies on the cadaver demonstrated that during the straight leg raising test the sacrotuberous ligament and piriformis muscle particularly are put under tension long before stretching of the sciatic nerve occurs. Therefore it is possible to consider the mechanical long pressure on the sciatic nerve as the cause of the continuous spasm of the piriformis muscle which remains due to its close relationship to the pathological changes in the sacro-iliac joint. The authors admit that this explanation of sciatic pain is associated with a decrease of the sacro-iliac joint. The direct proof but they believe it is correct. The theory suggests that the relief obtained from manipulative procedures for sciatic pain may be due to the release of adhesions between the piriformis muscle and nerve sheath rather than to the stretching of the nerve trunk and that an operation on the tendon of the piriformis at its trochanteric attachment might be attempted in cases of very obstinate sciatic pain. I. C. COTOVINA, M.D.

Gilman M. Osteochondritis of the Patella in a Case with Multiple Epiphyseal Involvement. J. B. & J. S. 1934, 95.

The author reviews the history of our knowledge of osteochondritis and related diseases of epiphyses and ossification centers and reports two cases of osteochondritis of the patella. The first case reported by Gilman was of the simple primary type involving the patella alone. The patient was a six-year-old boy with intermittent pain and weakness in the knee but no history of physical findings to indicate swelling, redness, or a rise in the local or general temperature. Roentgen ray examination revealed a typical ragged fragmented patella with areas of lessened density and incomplete ossification. Rest in bed for seventeen days and incomplete ossification of the patella with roentgen ray examination on two years later showed that the patella had regained its normal structure but was larger than normal for the child's age.

The second case reported was that of a twelve-year-old boy whose primary symptoms were similar to those in the first case. Roentgen ray examination confirmed the clinical diagnosis of patellar osteochondritis and showed irregularities at the osteochondral borders of the lower epiphyses of each femur. While the objective findings were bilateral the symptoms pointed only to involvement of the right knee. This knee was immobilized after three months all tenderness had disappeared after roentgen ray examination showed restoration of the patella. However, shortly afterward symptoms occurred at the point of attachment of the tendon of Achilles to the os calcis and a little later over the tibial tubercles. These also were relieved by conservative methods. JANE A. STACE, M.D.

Ghormley R. A., Kirilin D. R. and Gray E. A. Tuberculosis of the Knee Joint. A Comparative Study of Its Histological and Roentgenological Manifestations. Am. J. R. 1933, 747.

The roentgenological diagnosis of tuberculosis of the knee from arthritis of a non-tuberculous type remains a difficult problem despite recent advances in technique and interpretation. In the very early cases roentgenographic signs are entirely lacking. For a given time there is probably more to be seen in the roentgenograms in the non-tuberculous than in the tuberculous type. In cases of short duration the synovial thickening and sometimes by haziness of the joint. In non-tuberculous cases thickening of the synovial villi will be found with about equal frequency but general haziness occurs less often. Marginal erosion is suggestive of tuberculosis but is seen also in the non-tuberculous type. Marginal thinning while present more often in the non-tuberculous variety does not exclude tuberculosis. Thinning and interruption of the cortex of bone occur in both types of the disease. While preservation of the joint space over a long period is more likely in cases of tuberculosis it is often noted in non-tuberculous cases. In tuberculosis the area of greatest destruction both in cartilage and bone may be either central or marginal. In non-tuberculous cases it is practically always central. Atrophy of bone is seen in both varieties in a large proportion of cases and roentgenograms in a large proportion of cases may show sufficient destruction and hyper trophy to simulate the picture of a Charcot joint.

In late cases of both types destruction is advanced and distinction is often impossible. Absences of bone and sequestra are definite indications of tuberculosis but in a large percentage of cases sequestra are not visible in the roentgenogram. In the question of early cases in which histological data are essential for the determination of the type of disease the roentgenogram offers little help. It is toward the less advanced cases of one side or the other. In greater aid in the diagnosis.

A comparison is made between the roentgenogram and the gross and microscopic pathological specimens in sixty-five cases of tuberculosis and eleven cases of non-tuberculous arthritis of the knee joint. In a large percentage of cases the roentgenograms accurately demonstrate the pathological lesions, but, because of the similarity of the two processes, they cannot be considered in most cases as dependable diagnostic evidence. The principal shortcoming of the roentgenogram is its failure to demonstrate the early pathological changes in bone or synovia and the presence of areas of sequestration. The principal advantage of the roentgenogram is the demonstration of bone lesions which may remain hidden beneath more superficial disease of the synovia or beneath structures that appear normal.

### SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Pochintesta, A. Bone Tuberculosis and the Method of Robertson Lavalie (La tuberculosis ósea y el método de Robertson Lavalie) *An Fac de med, Univ de Montevideo*, 1933, VIII, 437

The author discusses the development, scientific basis, technique, and results of the Robertson Lavalie operation.

The theory of the operation is obscure and does not conform to the accepted principles of pathology. Cure is supposed to be effected by resolution, no account being taken of fibrocalcareous encystment or remineralization. The "hyperæmic strangulated focus" is inconstant and may be present in non-tuberculous processes. It may be confused with congested marrow. Its roentgenological determination is extremely difficult. In fact, Pochintesta admits that even after minute study of hundreds of roentgenograms made with Robertson Lavalie, he is unable to find or define it, and he considers it an illusory and fugitive lesion. He states also that the difficulties of implanting the graft in the strangulated zone, provided this zone can be localized, are at present insurmountable.

Pochintesta has collected sixty reports of this operation, chiefly from the Argentinian, Italian, and French literature. Sixteen per cent of the patients were cured and 12 per cent were benefited. Of forty-four patients operated on in Uruguay, 15 per cent were cured and 18 per cent were benefited.

Two postoperative stages are recognized. The first, which lasts for from four to six months, is characterized by immediate and absolute cessation of pain and general improvement. Immediate relief of the pain is a characteristic result of the operation, but a sedative effect would be obtained by any decompression. Canalization of the bone without the insertion of a graft would be sufficient to produce it. The theory of autogenous vaccination through the medium of the graft is being more widely accepted as an explanation of some of the beneficial effects of the operation. In some cases the first stage of the postoperative period is followed by a relapse.

The statistics are therefore not an absolute index of the results of the operation. They show only the results of inaccurate technique or deliberate modifications. Ultimately great advances will probably be made in this new field when its problems have been put on a scientific basis. The value of these methods lies at present in the obscure but effective action of the graft in the vicinity of a tuberculous lesion, which aids calcification, modifies trophism, changes the circulation, and intensifies the factors of defense. The method has opened up new problems for the investigator and surgeon. The operation can hasten cure considerably if it is done at the proper time and followed by correct after-treatment.

The article is supplemented by roentgenograms, diagrams, and an extensive bibliography.

M E MORSE, M D

Koch, S L. Complicated Contractures of the Hand, Their Treatment by Freeing Fibrosed Tendons and Replacing Destroyed Tendons with Grafts. *Ann Surg*, 1933, xcvi, 546

Infections in the hand follow the tendon and muscle sheaths and the worst damage is found where the exudate has been under the greatest tension, as in the digital tendon sheaths and under the anterior annular ligaments. In attempts at surgical repair it may be necessary to shorten a tendon, as for example, when flexors become fixed in a relaxed position during acute infection. On the other hand, if the tendons have been contracted during the infection they must be lengthened to restore function. Stiff joints must be well mobilized before tendon surgery is done.

Several specific cases are reported. In one, the flexor pollicis longus was enlarged and adherent to the base of the proximal phalanx of the thumb, preventing complete extension at the interphalangeal joint. Freeing this tendon and covering it with fat resulted in normal function. In another case, the flexor profundus of a finger in fixed flexion contracture was found seven months after the injury to be adherent to the flexor sublimis at its bifurcation. When this adhesion was relieved surgically the contracture was cured. In a third case the sublimis tendons to 3 fingers were sacrificed to allow room for the profundus, and the distal fragment of the latter was sutured to the proximal fragments of the sublimis and the profundus combined. According to Bunnell, the loss of the sublimis tendon is hardly noticed. Five other cases with more extensive disability are reported with details of the technique of treatment and illustrations.

Tendon grafting is necessary for the bridging of gaps caused by extreme contracture of the proximal fragment of a severed tendon, for cases in which infection has caused so many adhesions around a sutured tendon that it is impossible to free them and obtain a workable tendon, and for cases in which there has been complete destruction of a tendon. In the finger the bed is prepared for the tendon graft by removing all scar tissue and fragments of the old

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tendon The author prefers free exposure by lateral incision to the tunneling advised by some surgeons. Lnd to end suture of the graft to the tendon is the method of choice It is better to attach the distal end of the graft directly to the bone after removing the distal fragment of the torn tendon On the distal phalanx instead of trying to drill the small bone for attachment the tendon graft may be looped around the back of the bone and sutured to itself on the palmar side For a gliding mechanism the tendon graft when removed from the foot is taken with its surrounding areolar tissue intact to preclude the necessity of wrapping with fat from another source An annular ligament must be reconstructed at the second phalanx and at the middle of the proximal phalanx This may be done by wrapping a free tendon graft around the phalanx including the new tendon graft and holding it down to the bone with strips of the sublimis tendon may be used instead of a free graft

In order to make as easy as possible the method of attaching the tendon to the bone and of

In order to make as easy as possible the procedure of attaching the tendon graft to the distal phalanx and of constructing new annular ligaments it is put in its bed when tension is put upon it the author has come to perform the various steps of the operation in a definite order. After the removal of the scarred tendon a have been completely excised the graft is led in place and attached to the distal phalanx. A silk suture is attached to the distal end of the graft and passed through the free end of the excision on the scar tissue over the proximal portion of the p. max. phalanx and out through the p. max. incision. It is then brought back into the finger and held there by a slight tension on its free end the new annular ligaments are constructed. When they are completed it is possible by putting tens on the proximal end of the graft to see exactly how well they function and if they have been sutured under the proper degree of tension. The next step is to insure the proper degree of tension. The proximal end of the graft is then sutured to the distal end of the tendon in the palm of the finger in closure. After this procedure the final step is to place flexion and the wrist is put up in a moderate flexion. This article is based on a more pronouncedly by the author.

This article is based on a series of 100 cases treated by the author or on his hospital services. The patients ranged in age from 10 to seventy-two years. Seventy-seven of them were male and twenty-three were female. In 58 recent cases the average period of hospitalization was eighteen and a half months. In 42 older cases the average period of physical therapy was twenty-two days. Only 12 of the 100 cases was ninety per cent or more expected in six months to normal function noted while in a perfectly stiff limb, but the effort is worth motion to render amputation unnecessary. The chief causes of failure are infection, the pulling out of ossifications into bone fibrosis and adhesions of grafts to surrounding tissue and adhesions or ankylosis in joints. The attitude of the patient is

an important factor. It is obvious that a patient who is determined to obtain maximum function will have a much better result than one who desires motion to be minimal in order that he may obtain maximal financial compensation. It has sometimes been observed that results which were not very encouraging when the patient left the surgeon's care become much better with subsequent use of the finger over a period of years.

William Arthur Clark, M.D.  
and Linda A. Erly, Treat  
ment of Equinus in Congenital Club Foot  
The authors stress the

The authors stress the importance of adequate correction of equinus in club foot and outline their treatment with particula reference to the value of subcutaneous tenotomy and capsulotomy.

Treatment of congenital clubfoot should be started as soon as possible by first correcting the tarsus and using the tendons of the sole line in the ankle structures as resistance to work against. B weekly stretchings the position of the foot gradually changed from inversion to eversion and the long axis of the foot from adduction to the ward displacement of the forefoot to abduction and ward displacement. When this is correct, the ankle structures are the tendon of Achilles and the ankle is stretched to correct the deformity. Every patient should be taken to a aid injury to the structures of the foot and the equinus ulaly to the skin. The number of sittings required varies from four to sixteen according to the degree of deformity and the resistance and structure of the foot and should proceed as rapidly as possible. A plaster of Paris bandage is applied over the cotton of cotton flannel bandage as applied over the plaster, when the angle between the tarsus and the foot and the leg becomes acute on the dorsum of the of Paris dressing. At this time the plaster of Paris dressing should be substituted. When the club foot is corrected, the patient should be able to walk without the plaster. At this time the patient should be able to walk without the plaster.

corrected position for from one to two months, the proper length of time being determined by trial periods of release from the retention dressings. After discontinuance of the fixation, daily stretchings are performed at the patient's home.

In conclusion the author says that this procedure is to be considered also in the treatment of older children.

RUDOLPH S. REICH, M.D.

## FRACTURES AND DISLOCATIONS

Ayrola, A. B. A Case of Recurrent Posterior Dislocation of the Scapulohumeral Joint. (Sobre un caso de luxación posterior recidivante de la articulación). *Rev. de ortop. y traumatol.*, 1933, III, 188.

The case reported was that of a girl eighteen years of age. The patient had been born at term. The labor was difficult, and the obstetrician had used strong traction on her right arm. After birth, there had been pain and swelling of the joint for several days. About five months before the patient came for treatment, dislocation of the joint occurred when she made a movement of abduction with the arm extended, but in a few minutes it became reduced spontaneously. Since then it had recurred whenever the same movement was made. It took place without pain and could be reduced easily.

At operation performed under ether anesthesia on April 15 the joint was exposed through an incision on the posterior surface of the shoulder beginning at the acromion process and running down parallel with the posterior axillary line. A capsulorraphy was performed and a plaster cast including the thorax was applied. After two months the cast was removed and massage, progressive movements, and treatment with heat and electrotherapy were begun. By May 9, the movements of the arm had become completely normal.

AUDREY GOSS MORGAN, M.D.

Howard, N. J., and Eloesser, L. The Treatment of Fractures of the Upper End of the Humerus. An Experimental and Clinical Study. *J. Bone & Joint Surg.*, 1934, XVI, 1.

The authors studied stereoscopic roentgenograms of eighty-eight fractures of the proximal portion of the humerus recorded since 1925 in the files of the Department of Roentgenology of Stanford University Medical School. Not a single fracture of the anatomical neck was found. The authors believe that Kocher's classification of supratubercular, pertubercular, infratubercular, and subtubercular fractures is more logical than the usual classification. Of the fractures they review, twenty-four were pertubercular, fifty-five were infratubercular and subtubercular, five were epiphyseal separations, and four were fractures of the humeral shaft extending upward into the surgical neck. The largest group were forty-one fractures of the high or infratubercular type, all of which occurred in adults. Of the fourteen subtubercular fractures, eleven occurred in children from four to ten years of age.

The displacements are analyzed. The most frequent were abduction, external rotation, and forward displacement of the proximal fragment, internal rotation with medial and anterior displacement, and abduction of the distal fragment. Shortening ranging from a few millimeters to 4 cm is always present.

The subtubercular fractures in young children occurred in the region of the upper shaft where the dense cortical bone begins to thin out and become replaced by cancellous bone.

The shoulder muscles of a normal stillborn male fetus of six months were dissected and their measurements compared with those of the shoulder muscles of an adult male cadaver. In the stillborn infant there was low attachment of both upper and lower insertions of the pectoralis major, latissimus dorsi, and teres major muscles. The authors believe that this explains the low position of humeral fractures in the first decade of life.

Of the twenty-four pertubercular fractures reviewed, all occurred in adults and only two before the fifth decade of life. As a group such fractures are characterized by impaction.

All of the epiphyseal separations occurred in the second decade of life.

A detailed description is given of shoulder-muscle action as worked out on a phantom model with rope and elastic traction similar to that devised by Mollier. The article contains photographs of the model and charts showing muscle synergy and antagonism following different movements at the shoulder joint. An analysis of the reduction of fractures of the upper extremity of the humerus showed that downward traction with simultaneous lateral right-angled traction on the upper end of the lower fragment gave exact reduction, whereas traction in the abducted position or in Boehler's position did not.

The authors believe that Bardenheuer's principles of treatment of these fractures deserve consideration. They describe their method of reduction, which they usually employ under local anesthesia with the patient sitting on a stool. It consists of a downward pull by means of the operator's foot in a swathe around the patient's forearm which is held flexed by an assistant. The operator's hands are free to manipulate the distal fragment. After the reduction a small pad is placed in the axilla, the forearm is held by a sling, and the arm is bound loosely to the body. Massage is used from the beginning. Passive motion is started in the first week, and gradually increasing active motion at the end of the second week.

BARBARA B. STIMSON, M.D.

Haggart, G. E. The Treatment of Comminuted Colles' Fracture in Elderly Patients. *New England J. Med.*, 1933, CCIC, 1140.

Seventeen of the last twenty-five fractures of the lower end of the radius seen at the Lahey Clinic occurred in persons over fifty-eight years old. In many of them there was comminution of the frag-

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ments Haggart urges early reduction followed by proper splinting

The anesthetic of choice at the Lahey Clinic in the treatment of such fractures in elderly persons is avertin. With the patient lying on the fluoroscopic table traction and countertraction are made and the impaction of the radial fragments is broken up. With the traction maintained the fragments are then moulded into alignment by firm pressure of the operator's thumb passed distally over the dorsum of the patient's wrist. The hand is placed in the position which best maintains the alignment and the normal anatomy of the joint and is held by the operator while an assistant applies a sugar tong plaster splint. The splint is applied to the elbow with gauze. It is so constructed that it permits complete flexion in all interphalangeal and metacarpophalangeal joints but prevents pronation and supination and provides anteroposterior immobilization of the radius and ulna.

The patient is instructed to use his fingers constantly and abduct the arm over the head at least six times daily. The splint may be adjusted as necessary by cutting the gauze bandage if the swelling increases or tightening it when the swelling recedes. It is left on for from five to seven weeks. If the findings of roentgen ray examination after removal of the splint are satisfactory physical therapy with rad and light massage and active exercises is begun.

RUDOLPH S REICHERT MD

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t p y l 933 7

Two and a half years before the case reported was seen by the author the patient sustained lesions of both wrists as the result of a fall in the hyperextended hands. He had been treated unsuccessfully for fractures of the lower end of the radius. He had marked loss of function symptoms of nerve compression and atrophy of the forearm muscles. Roentgenograms showed almost identical lesions in both wrists namely fracture of the scaphoid bone and of the edges of the articular surfaces of the radial dorsal dislocation of the scaphoid bone and anterior displacement of the os magnum and the right wrist was operated upon six and the left wrist fifteen days later. Through a dorsal incision on the fragments of the scaphoid semilunar and cuneiform bones were excised the os magnum being left to articulate with the radius. After twelve days of immobilization in slight extension physical therapy was begun. The results were very good.

In carpal lesions a clinical diagnosis is difficult and roentgen ray examination of both wrists is indispensable. Anteroposterior and lateral roentgenograms should be taken.

Fracture of the scaphoid is characterized by symptoms of sprain of the wrist with the maximal manifestations in the anatomical snuff box. In old

cases it is suggested only by an increase in the thickness of the external carpal column. The fracture usually occurs in the medial part of the bone.

Displacement of fragments is absent or slight. Subtotal dislocation of the carpal bones is frequent. The condition must be differentiated from bipartite scaphoid. The fracture must be reduced if possible and the wrist immobilized for six weeks between flexion and extension. If reduction is impossible the fragments must be extirpated.

Subtotal retrolunar dislocation of the carpus is characterized by displacement of the os magnum behind the semilunar bone. The dorsal dislocation may occur with or without enucleation of the semilunar bone depending on whether the anterior radiolunar ligament tears or not. The enucleated semilunar bone frequently rotates 90 degrees around the anterior radiolunar ligament as an axis. Pain and loss of function are marked. The wrist becomes round and symptoms of nerve compression often develop. At the base of the third metacarpal the normal depression is obliterated by the head of the os magnum. In recent cases especially those with symptoms of nerve compression reduction should be attempted immediately. If the attempt fails as is frequently the case the semilunar bone must be surgically replaced or extirpated. In old cases extirpation of the scaphoid bone semilunar bone and sometimes the cuneiform bone is necessary.

W H MARTINEZ MD

Huechel W The Treatment of Fractures of the Carpal Bones Late Results (Uber die Handgelenke) Hand u. Wundheilkunde Nachrichten u. 350 1933

Follow up examinations made by the author show that the frequency of fractures of the carpal bones is not sufficiently recognized. In cases in which the injury is assumed to be a simple sprain and a roentgen examination is not made improper treatment is given and the fracture is recognized too late. In most cases the fracture is a fracture of the scaphoid and penulnar luxation.

Fractures of the carpal bones require absolute immobilization obtained by means of a plaster cast or a dorsal plaster splint. In simple cases the immobilization should be continued for a period of three weeks and in complicated cases for as long as five or six weeks. Even in cases of innocent looking dislocations of the wrist failure to make a roentgenographic examination is unexcusable. A good functional result can be obtained only by strict immobilization.

SCHENK (Z)

Ernst M and Roemmelt W Fragmentation of the Carpal Bones (Ueber die Fragmentation der Handwurzelknochen) Abh. Pr. 933 438

On the basis of ninety cases the author discusses the occurrence of chipping of the carpal bones as an



injury distinct from ordinary fractures. As a rule there is a tearing fracture. Only in the semilunar bone are small fragments observed after direct fractures. For diagnosis, roentgenograms from various angles as well as stereoscopic views are necessary. The small fragments rarely heal to the bone, but form pseudo-arthrotic unions.

The article contains a large number of roentgenograms showing the site and type of fragmentation occurring in individual bones.

Clinically the small fragments cause comparatively slight and only transitory distress. More serious and lasting pain, and not rarely permanent disturbances, are caused only by injuries of the semilunar bone and the trapezium. In injuries of these bones prolonged rest is necessary, whereas in injuries of the smaller bones brief rest followed by physical therapy gives satisfactory results.

The authors believe that many of the so-called accessory carpal bones are merely healed pseudo-arthrotic fragments.

C KOENIG (Z)

Schnek, F. The Roentgenological Diagnosis of Fracture of the Scaphoid Bone of the Hand (Zur roentgenologischen Diagnose von Kahnbeinbrüchen der Hand). *Zentralbl f Chir*, 1933, p 1954.

Fracture of the scaphoid bone of the carpus is common. Delay of recognition and non-recognition of this injury are due to faulty clinical examination and improper roentgenological methods. The usual dorsovolar view with the wrist in extension is not satisfactory as in this position the hand is in slight volar flexion. In this position the scaphoid is in a somewhat volar-flexed position, the fracture line, which is usually vertical to the long axis of the bone, is seen in an oblique direction, and even a rather wide fissure may be almost invisible. If the hand is placed on the cassette in the position of a fist, it is somewhat dorsally flexed and ulnar-abducted, the scaphoid bone is visible in its entire extent, and the line of fracture is seen distinctly. For the side view, semi-pronation is often advantageous as the scaphoid bone is thereby brought out on the plate in its entire length and without overlapping shadows of the neighboring bones.

VON TAPPEINER (Z)

Jepson, P. N. Traumatic Backache. *J Int Med* 1933, 41, 1778.

The lower part of the back is a shock absorber and the pelvis and lower part of the spine are ruggedly built. According to Chamberlain's method of computation, the male pelvis is normally capable of only from one-half to one-third the mobility of the normal pelvis of the non-pregnant female. However, involvement of the pelvis causes much more discomfort in the male than in the female, and because of his occupation and more frequent exposure to trauma the male is more apt to suffer from traumatic backache than the female.

According to Ryerson, younger patients are more apt to have mechanical instability than older

patients, whereas older patients have an arthritic process which renders the joints more vulnerable to traumatism.

Sprains of the back are very common. The symptoms may develop at once or not until some time after the accident. The usual cause is external violence or stretching due to unnatural strain or stress.

Traumatic back injuries are most frequent in the lumbar spine, next most frequent in the cervical spine, and least frequent in the thoracic spine.

The chief symptom of traumatic backache is pain. As a rule there is a history of a blow, strain, or fall. If the condition is primarily muscular, the pain is intensified when the involved muscle or muscles are strained. When the back is moved in a certain direction the pain is increased and muscle spasm occurs. In most cases standing is very painful. In others, the patient is unable to remain seated for any considerable length of time and any position he assumes is uncomfortable. Often there is discomfort following coughing or sneezing.

In most low backaches caused by traumatism there is, in addition to pain, a definite list away from the affected side with referred pain in the posterior aspect of the thigh on the side opposite the direction toward which the pelvis lists. Back bending is limited in almost all directions, but particularly in a direction away from the side of the pelvic list.

Among the tests devised to determine the site of the low back pain is forcible compression of the sacro-iliac joints, which will often elicit pain in the affected joint.

In the test used by Gaenslen the patient is placed flat on his back with the thigh and knee of one lower extremity fully flexed and held in this position by the patient. The other lower extremity is held fully extended, and pressure is made on the knee.

Another test consists of forcing the leg into flexion, abduction, and outward rotation. This causes pain in the sacro-iliac joint involved.

Roentgen-ray examination in traumatic backache is usually negative unless there is an associated arthritis. In the great majority of cases of back injury, pain or tenderness is present in one or both sides of the lowermost part of the abdomen. This region is supplied by the hypogastric and ilio-inguinal nerves which, in addition to supplying the lower part of the abdomen, send sensory filaments to the buttock.

In the differential diagnosis of traumatic arthritis of the back a fracture or a pre-existing hypertrophic arthritic condition must be ruled out. The treatment must be specific and definite and follow a regular plan.

The prognosis as to recovery is good provided associated abnormal conditions are corrected. Among the latter are foot strain and focal infection.

In the treatment given by the author the patient is placed on a fracture bed or, in home treatment, a suitable modification thereof, and Buck's extension is applied to both legs. If the Buck's extension

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makes the patient unusually restless the weights are raised for half an hour from time to time. The patient is allowed to turn on his side for a change of position but as a rule is kept on his back in order to obtain the maximum amount of positive support and immobilization. This position is maintained for two weeks. At the end of that time a plaster of Paris cast is applied with the patient resting on a modified Goldthwait hyperextension frame. The cast extends from the antraps down to the knee on the side of the referred pain.

By holding the back in hyperextension the maximum amount of immobilization is obtained and the position acquired while the patient is lying in bed is maintained approximately.

After the patient has become accustomed to the cast he is allowed out of bed for a limited time and as he becomes stronger the periods of freedom are gradually increased. The cast is usually kept on for two weeks and in some severe cases for three weeks. At the end of that time it is removed and the back is strapped with adhesive tape. A back brace or corset made from measurements previously taken is applied over the strapping. The adhesive tape is left on for four or five days and then re-applied.

Between strappings treatment by baking and light massage is given. At the end of two weeks the adhesive tape is removed and mild exercises are begun. The exercises are gradually increased in severity and scope.

ASTROM F 541 MD

Neck L K Traumat c Injur s of th Hip  
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This is a report on 10 cases of hip injury including fractures of the neck of the femur, simple dislocations or central dislocations of the femur, pelvic injuries of the soft parts and the sequelae of the epiphyses coxa vara osteochondritis juvenilis coxa and sprains. The youngest patient was four years old (shipped epiphysis) and the oldest eighty seven years (fractured neck of the femur). Up to the twentieth year of age epiphyseal separation predominated whereas fractures of the neck of the femur and dislocations of the femur were less common. Dislocations of the femur and dislocations of the pelvis were most frequent between the twentieth and the fifth years of age. Fractures of the neck of the femur were most common after the fifth year (76 males 26 females). The majority of the females had a fracture of the neck of the femur which occurred at an advanced age and in many instances was caused by a fall. Of the factors responsible for the injury according to the statements of the patients the most common were blows against the hip trochanter or buttock and falls on these parts. In

the cases of moorers they were crushing against a wall or a fall on the hip and buttock from a considerable height with the legs extended crushing by scaffold or earth the blow of a heavy object on the hips entanglement in a belt gearing the lifting of a heavy load with the hips bent and torsion of the body. For separation of epiphyses a very trifling cause was sometimes sufficient. Dislocations especially central dislocations with several fractures of the pelvis occurred only under great force.

The majority of the injuries were fractures of the neck of the femur of various types. Only 20 of the 55 patients were brought to the hospital immediately after the accident. The 35 others were admitted from several weeks to several years after the injury. The outward rotation characteristic of fractures of the neck of the femur was especially pronounced in the peritrochanteric crush fractures. The old cases showed a high position of the trochanter a positive Trendelenburg sign coxa vara limitation of movement especially of abduction and internal rotation and pseudarthrosis. In impacted fractures without dislocation there were few signs sometimes even after several days.

Röntgen examination is indispensable. It gives information regarding the course of the fracture line and in old cases it shows the type of displacement and the changes in the head and neck of the femur.

In the cases of persons with old injuries who enter the hospital because of pain and difficulty in weight bearing and locomotion the treatment should be conservative. In cases of recent injury with distal displacement and a plaster dressing applied. In cases of recent fractures with impaction or no displacement only the application of a plaster dressing is necessary. In the cases of old patients with a pseudarthrosis treatment with a brace is indicated. The author cites 2 cases of old injury in which a hip operation by Lexer's method was done in the joint and in the other with osteotomy. For cases of poorly healed fracture of the neck of the femur Niederecke rejects resection as the method of operation. On the other hand he recommends the plastic operation by Lexer's method even for old persons if they are healthy. In the cases of patients who come for treatment soon after the accident he uses the Whitman procedure. In impacted fractures the impact should be broken up if the patient is a sturdy individual the fracture then reduced and a plaster dressing applied on an extension table with incorporation of the normal leg as far as the knee. In the reviewed severe cases which were treated early the healing period ranged from five to six months. When treatment was given early the full capacity for work was not only satisfactory both in the cases of laborers and those of persons of the higher age groups who were injured in accident. Compensation when it was awarded could be discounted after two years. In hip plastic

operations a favorable end-result cannot be expected until after a period of years and continued after-care. Even patients with pseudarthroses can be rendered fully capable of full work.

Among the cases reviewed there were 17 of dislocation. Just as in the cases of fracture of the neck of the femur, there were cases in this group also which came for treatment several years after the accident. In 1 case thirteen years had passed. Reduction was done under anæsthesia. When the Kocher and lever methods failed, reduction was effected by traction from behind and inward rotation. In cases of suprapubic dislocation it was accomplished by simple traction. The reduction maneuvers used in old cases were the same as those employed in cases of congenital dislocation of the hip. In cases of recent central dislocation extension treatment was given for five weeks and followed by immobilization between sand bags. Walking was not allowed until after six or seven weeks. In cases of dislocation poorly healed several years after the injury, plastic operations for reconstruction of the head of the femur, acetabulum, and acetabular roof were done. Full capacity for work was restored.

There were 13 cases of contusions. Sometimes a picture of serious illness is presented in such cases in spite of negative roentgenograms, and if the symptoms do not soon subside chronic and even tuberculous infectious processes may develop as sequelæ. Operation was performed in 6 cases. Mobilization of the hip joint and subtrochanteric osteotomy were each done twice.

There were 13 cases of slipped epiphysis with consequent traumatic coxa vara. The clinical findings in these cases were rather typical. The roentgen findings depended on whether the injury was recent or old. In 5 cases of already existing coxa vara a subtrochanteric osteotomy was done, and in 1 case a plastic operation on the hip by the Lexer method was performed. In 6 cases, non-operative reduction was done under anæsthesia and followed by immobilization in a plaster dressing for seventy-two days. In 10 cases good results were demonstrated by the follow-up examination made after a period of years.

There were 3 cases of osteochondritis juvenilis coxæ. A history of trauma was determined definitely. Two of the cases were recent. The treatment consisted in extension, the application of plaster, and the use of a brace. In the 1 old case the condition was found unchanged at the follow-up examination. In the 2 recent cases permanent satisfactory results were obtained.

Arthritis may develop after any hip injury regardless of the age of the patient, but is more frequent in older than in younger persons. It is most common after rough treatment methods causing injury to the articular cartilage. The constitution does not play the manifold roles in this condition that have been ascribed to it.

The report shows how, even in the most severe hip injuries, complete restoration of function can be obtained when timely expert institutional treatment is given.

A. FRAENKEL (Z)

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Huard A Case of Thrombophlebitis of the Arm  
Revealed by Effort Resection of the Throm-  
bosed Segment of the Vein and Denudation of  
the Artery Cure (Un cas de thrombophlébite du  
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1933 lx 1406

The patient whose case is reported was a man thirty eight years old who stated that after reaching for a telephone with his left hand he developed weakness in the hand and arm which was followed by increasing swelling. On his admission to the hospital the arm was oedematous and purple abduction of the arm was painful the axillary vein was hard and painful and X ray examination showed an increased upper mediastinal shadow.

Twelve days after the patient's admission to the hospital the thrombosed portion of the vein was removed and the artery denuded. Six days later the condition of the arm was much improved but the left side of the head face and neck was oedematous and discolored and there was a painful enlargement of the left internal jugular vein. To relieve the congestion and pain venesection was done on the external jugular. Anti syphilitic treatment was given because of a doubtful blood reaction. Clinical improvement was very marked but the arm remained weak and the mediastinal shadow persisted.

The author reports observations on the arterial and venous blood pressure in the two arms and the variations produced in the pressure of the cerebrospinal fluid by Queckenstedt's procedure during the time that there was evidence of the thrombosis of the internal jugular vein on the left side.

In discussing the cause of the thrombosis the author states that the slight trauma seemed scarcely enough to produce the condition but it is equally difficult to ascribe the condition to infection or syphilis.

In the discussion of this report attention was called to the fact that in such cases there may be an increase in the blood platelets with a corresponding increase in the clotting time of the blood.

CADÉVAT pointed out that infection within the chest is quite possible in such a case.

MAASE W. POOLE M.D.

Podkaminsky V. A. Disturbance in the Cardiac Vascular System from Arteriovenous Anurism (Störung des Herzes durch Arteriovenöse Anurism) Arch. f. klin. Chir. 1933

Podkaminsky reports the case of a man who developed a large arteriovenous aneurism several years

after a severe injury of the femoral artery. When pressure was applied to the aneurism the blood pressure rose from 118/58 to 145/8 mm Hg and the pulse rate decreased from 66 to 0. The heart was greatly enlarged. Marked dyspnoea and oedema were present. A murmur was heard over all of the valves.

Three months after operation the heart was considerably reduced in all diameters the patient was able to work and even to go up stairs without much fatigue. The oedema had disappeared and the murmurs had ceased.

The author discusses the most commonly accepted theories regarding the symptoms associated with compression of an aneurism: (1) the reflex theory (2) the mechanical theory (he cites especially the work of Rieder and Fick) and (3) the mechanico-neurogenic theory according to which the increase in the blood pressure is mechanical and the slowing of the pulse is neurogenic (Gerlach, Harkle, Wachs, and Kleinschmidt).

According to the author's theory both symptoms are mechanical. A certain amount of blood flows directly into the venous system. As a result there is a decrease of the blood pressure in the arterial system and an increase in the venous system with a distinct venous pulse. An increased amount of blood flows into the right heart under increased pressure. As a result this part of the heart becomes dilated. The minute volume increases. However as the arterial pressure decreases simultaneously the load on the left heart is greatly increased. As a rule the blood pressure remains at a level below the normal. According to his fact this is responsible for a decrease in the tone of the arterial walls, an increase in the capacity of the circulatory system and a consequent further increase in the demands made upon the heart. The output and the contractions of the heart are increased. Dilatation and hypertrophy result. As the regulation of the pulse is dependent upon the dynamic characteristics of the heart muscle the slowing due to compression is caused by a crilling of the heart. The hydrodynamic phenomena produced by the compression of an aneurism resemble the symptoms which the author has noted in persons who have worked in a bent over position. In such persons there is an increase in the minute volume blood pressure and the transverse diameter of the heart (chiefly on the left ventricle). The phenomena present an analogy also to the findings of experiments on compression of the walls of the abdomen. The author cites the investigations carried out by Frey who found the arterial pressure increased even after severance of both vagus and sympathetic nerves below the diaphragm.

FRANZ (Z)

## BLOOD, TRANSFUSION

Kotumovic, G. The Survival of Blood (Ueber das Leben des Blutes). *Arch. f. exp. Med.*, 1933, 1/1, 21.

The author believes that the term, "preserved blood" should be dropped altogether and the term, "surviving blood" substituted for it. According to the findings of various investigators, the life of erythrocytes varies from twenty to one hundred and twenty days. As yet, no definite criterion of the viability of these cells has been recognized. We have only a certain indication of their death—hemolysis. Blood which shows hemolysis should not be used. Blood which is kept in biological solutions (physiological salt solution, a solution made from seven parts of sodium chloride, five parts of sodium citrate, two tenths parts of potassium chloride, four one hundredths parts of magnesium sulphate, and distilled water to make up 1,000. This is used in a proportion of 1:2) survives for from six to eight days at a temperature between 15 and 30 degrees. In a 4 per cent solution of glucose with sodium citrate, blood survives at the same temperature for from fifteen to eighteen days. LESTER ZI

Boycott, A. E., and Oakley, C. I. The Adjustment of the Blood Volume After Transfusion. *J. Path. & Bacteriol.*, 1934, xxxviii, 91.

A short review of the literature is first presented. It has been generally believed that after transfusion of blood into animals, the increase in blood volume is soon corrected by the expulsion of plasma from the injected blood and the animal's blood to provide space for the injected corpuscles. In experimental studies the authors found that after the injection of blood equivalent to from 50 to 80 per cent of the existing hemoglobin, the resulting hemoglobin value was not as high as would be expected if the blood volume had returned to normal.

In a subsequent series of experiments carried out by them rabbits were given transfusions of blood amounting to from 50 to 100 per cent of their blood volume. Before the transfusion, the blood volume was estimated from normal standards and the total corpuscles, plasma volume, hemoglobin, plasma protein, and plasma chlorides were determined. One, two, or three days later, the animals' blood was washed out with warm citrate salt solution and the blood volume and the other determinations were repeated. These experiments showed that there was an increase in blood volume equivalent to the number of corpuscles injected. The plasma volume after the transfusion was practically the same as before. The authors therefore concluded that the volume to which the animal adjusts its blood is determined by the plasma volume rather than by such factors as concentration and viscosity. There was no evidence of red cell destruction. An average of 80 per cent of the serum protein injected disappeared from the blood after transfusion. The blood and plasma chlorides acted similarly. HOWARD L. ALT, M.D.

Kausenhoff, W. Accidents in Blood Transfusions (Zurichensache bei Bluttransfusionen). *Zentralbl. f. Clin.*, 1933, p. 50.

In spite of all precautionary measures, there are occasional cases of injury from blood transfusion in which the complication is not explained satisfactorily by the donor's blood and therefore no certain protection against it is possible. The author reports one such complication which occurred in about 200 transfusions done in the last year and a half. Milder complications, manifested by subacute symptoms such as chills, fever, and mild, transitory jaundice, have also been seen by the author occasionally, but they are not important.

Recently Kausenhoff saw another severe reaction after a transfusion which was done for an acute, severe intestinal hemorrhage. A compatible donor of the same group (A) was used and 1,000 ccm of blood were transfused with considerable salt solution. Preliminary biological tests were negative. The transfusion of 100 ccm of blood was followed by severe tenesmus, precordial pain, suffocation and vomiting. The vomitus did not contain blood. A transfusion reaction was suspected, but the symptoms might have been due to the very severe hemorrhage. As the patient was still bleeding profusely and had become unconscious transfusion was indispensable and therefore more blood was injected slowly. The manifestations slowly subsided and the patient showed considerable improvement. On the following day jaundice developed and erythrocytes, granular casts, and oxyhemoglobin appeared in the urine. Therefore, although the donor belonged to the same blood group, hemolysis had occurred. Nevertheless the severe hemorrhage stopped and did not reappear. The icterus faded rapidly, and on the second day after the transfusion the urine became normal. In another group determination, which was made with indirect test serum examination and the roentgen test (crossed agglutination), Group A was found on both sides. The author suggests that the disturbances may have been due to the transfusion of too much blood or to an agglutination titer of the donor's blood which was too high for the patient who had been jeopardized by the enormous hemorrhage.

Another severe reaction occurred in the case of a sixty-two year-old man who was seriously ill with chronic pernicious anemia. The hemoglobin was 35 per cent, the erythrocyte count was 1,570,000, recent punctate hemorrhages had occurred on the legs, and the stools contained blood. The blood group was found to be O. After a satisfactory biological test, 1,000 ccm of blood were transfused from a donor of the same group without untoward symptoms. However, in the evening the patient had chills, a temperature of 40.2 degrees C., and clouding of the sensorium. After two days the condition was improved, the hemoglobin content of the blood was 55 per cent, and the erythrocyte count was 2,360,000. The patient was discharged sixteen days after the transfusion. Eight months later he was

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re admitted because of increasing fatigue. The hemoglobin was then 40 per cent the erythrocyte count was 1,880,000 and the picture presented was that of typical pernicious anemia. After preliminary typing (a) a transfusion from another donor of the same group was given. Seven hundred and fifty cubic centimeters of blood were transfused without reaction. That evening the patient became delirious and had a fever of 4 degrees C. but on the following day his mind was entirely clear. He was free from fever, the urine was negative and the hemoglobin was 65 per cent. Two months after his discharge he was admitted again because of increasing weakness. The hemoglobin was then 30 per cent and the erythrocyte count 1,300,000. A transfusion of 450 ccm from a donor belonging to Group O was given without causing a reaction but at noon the patient had chills and a temperature of 40.2 degrees C. On the following day his temperature was 39.2 degrees C. and the urine negative. Jaundice appeared on the second day but disappeared again after four days. The hemoglobin was 30 per cent and the patient was becoming more exhausted. After ten days another transfusion of 1,000 ccm was made from the same donor. The preliminary test was good and no reaction occurred during the transfusion. If fever at the end of an hour the patient had chills and a temperature of 39.3 degrees C. Later he collapsed with a small pulse and jaundis. The urine was dark red and contained oxyhemoglobin and granular casts. Death occurred on the following day with

increasing circulatory weakness. Permission for autopsy was refused.

This patient was doubtless a very poor risk. The first two transfusions were followed by some improvement but the third had no beneficial effect. There was certainly no error in the typing. In the third and fourth transfusions the same donor was used and therefore the direct test was not made. Only the hematocrit examination and the biological test were done. Perhaps the omission of the direct test may explain the hemolysis. Trauma observed in repeated transfusions from the same donor. This suggested the possibility that the earlier transfusions produced in the recipient immune antibodies against individual and group substances in the donor blood which were injurious. This injury may be avoided by crossed agglutination. Many advise changing donors in repeated transfusions. Perhaps the volume of the transfused blood also played a role. Large blood transfusion are not necessary especially in cases of chronic hemorrhage and diseases of the hematopoietic system. In such cases it is better to give frequent small transfusions. Blood group determinations are essential. The direct and indirect examination with repeated use of the same donor. The characteristics of the serum must be determined each time. However it is better to use another donor. The amounts of blood transfused should be small.

FRANCIS HENRI (2)

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

Van Allen, C M, LaField, W A, and Ross, P S  
*The Roentgen Diagnosis of Atelectasis, with  
Special Reference to the Ground-Glass Shadow  
and the Degree of Pulmonary Shrinkage*  
*Radiology*, 1934, **xii**, 27

Because of the disagreement with regard to the definition of atelectasis and the absence of pathognomonic signs, the roentgen diagnosis of the condition has not been entirely satisfactory

Atelectasis is defined as a totally airless state of either a part or all of the lung, with collapse of the small airways and alveoli. This definition applies to the three recognized types of the condition, namely, the congenital, the obstructive, and the compressive

Recently the term "atelectasis" has been used to include various states in which the pulmonary tissues are partially air-containing, the collapse not being complete, or in which the alveoli are filled with exudate and are not collapsed

Pneumonia and atelectasis should not be confused although areas of atelectasis may develop in the course of pneumonia when bronchi become plugged by the viscid exudate. Pneumonia is more prone to develop in areas of obstructive atelectasis that are contaminated with pneumococci than in a similar normally aerated lung

Areas of hypoventilated lung should not be classified as atelectasis as they carry on a definite, though decreased, respiratory exchange, while atelectatic tissues are wholly without external respiration

The characteristic roentgenographic signs of atelectasis are produced by the reduction in size of the affected tissue. The diaphragm on the affected side is elevated and part or all of the mediastinum is displaced toward the involved side. At times the intercostal spaces on the atelectatic side are narrowed while those on the other side are widened. The spine may show scoliosis with the concavity toward the lesion. During respiration the affected side moves less, and the opposite side more, than normally, as evidenced by the excursions of the ribs and diaphragm. The mediastinum moves toward the side of the lesion on inspiration, and away from it on expiration

Bilaterally symmetrical atelectasis produces none of the displacements described

These roentgenological features of atelectasis are quite generally agreed upon, but there is considerable variation in the interpretation of the shadow cast by the pulmonary tissues themselves. The lung shadows have been variously described as homogeneous, mottled, streaked, slightly hazy, and extremely opaque, but no one has made use of these

variations to differentiate the types of atelectasis or to distinguish atelectasis from other conditions producing increased density of the lung

All of these signs have been found in other pulmonary diseases. Wu found diaphragmatic elevation in 55 per cent and mediastinal displacement in 12 per cent of cases of pneumonia. Manges and Packard point out that fibroid pulmonary tuberculosis produces findings similar to those in obstructive atelectasis

The authors determined to search for a means of more accurate diagnosis between atelectasis and other lesions causing pulmonary consolidation

The term "atelectasis" was used to denote complete airlessness and alveolar collapse, massive or focal

First, roentgenograms of excised dog lungs in which atelectasis had been produced by obstructing a bronchus were made and compared with roentgenograms of the same lungs after they had been artificially reinflated. Next, roentgenograms of fresh atelectatic human lungs of all types obtained at autopsy were made, studied, and checked by histological examination. Then roentgenograms of the chests of living human subjects presenting these lesions, determined by careful clinical observation, were made. The lung shadows of the three groups were studied and compared as to composition

It was found that the lung shadow was completely homogeneous only when the lung tissue was entirely free from air. Even an extremely small amount of air, detectable only by microscopy, is plainly revealed by roentgenography

A completely airless lung consistently gives a homogeneous "ground-glass" shadow if (1) the dosage of X-ray is sufficient to penetrate the tissues and demonstrate their radioconsistency, and (2) the shadow of the lesion is large enough to permit discernment of its consistency

The other common consolidations of the lung which are confused with atelectasis cast a definitely heterogeneous shadow because of the presence of residual air. While a few other lesions present the ground-glass shadow of complete airlessness, these can usually be distinguished readily by other signs

The relative sizes of affected lobes is of importance. Measurements by Wang and Van Allen show that a completely atelectatic lobe is very much smaller than normal during both inspiration and expiration. In pneumonia the affected lobe is of about normal size during expiration but much smaller than normal during inspiration. Wu has shown a high position of the diaphragm on the side of a pneumonic lesion during inspiration but never on expiration, while in atelectasis the diaphragm is high during both phases of respiration

The ground glass shadow is constant in atelectasis unless shadows of irregular density are superimposed upon it. In massive atelectasis the area of even density is easily seen. In focal atelectasis the areas may be so small as to be obscured but the characteristic evidences of visceral displacement are constant.

In pneumonia the roentgen shadow of the lung is always heterogeneous because of the presence of air and visceral displacements due to reduction in the size of the lung are absent or limited to the inspiratory phase.

A tuberculous lung also gives a heterogeneous shadow except in caseous areas which are usually small. Small scattered tuberculous lesions may be difficult to differentiate from focal atelectasis especially if visceral displacements occur at both inspiration and expiration as may be the case in fibrous tubercles. Under such conditions focal atelectasis can usually be ruled out as it rarely occurs so chronically as tuberculosis. If the lung is compressed by pneumothorax it may be impossible to distinguish focal atelectasis from tuberculosis.

Hæmorrhagic infarcts produce a mottled shadow although they may cause visceral displacements after fibrous shrinkage.

Pulmonary hypoventilation can be distinguished from atelectasis by absence of the ground glass shadow.

An extrapulmonary mass encroaching upon the lung field produces a ground glass shadow unless lung tissue overlies it but the visceral displacements are usually not characteristic.

When massive atelectasis and another consolidation occur in the same part of a lung the ground glass shadow of the atelectasis obscures the other lesion unless calcified areas of air containing cavities are present.

In neoplasms of the lung associated with obstructive or compressive atelectasis the shadow of the two lesions are indistinguishable. In the obstructive type visceral displacements may be present but in the compressive type they are absent.

MAAR E M THES MD

## ANÆSTHESIA

Herb I C. The Present Status of Ethylene. *Am M A* 1933 cl 76

The author states that to underpublicize given the explosive hazard of ethylene is unfortunate as it may deprive patients surgeons and anesthetists of a most valuable anesthetic agent. The minimum amount of ethylene in air that is inflammable is 3.02 per cent. Tests have shown that explosions can occur only in the dangerous area 1 ft above the mask and 2 ft to the side of the exhalation valve. Safety in the use of ethylene may be obtained by removing sources of ignition such as open flames and cauteries. To prevent electrostatic explosion the hospital with which the author is connected has perfected a plan to ground all objects on which a

charge may exist. At first a large sheet of steel was placed on the floor for this purpose. Later the floor was changed to cloisonné terrazzo with brass strips. All operating room furniture is equipped with several small brass chains long enough to drag on the floor. Since these precautions were taken no indication of explosion has been seen in over 20,000 anesthetics.

The author believes that ethylene possesses distinct advantages over all other anesthetics especially when it is combined with local infiltration in pelvic operations and operations on the upper part of the abdomen.

GEORGE R. McVITTIE MD

Ang I seo C and Tzo aru S. Considerations on the Mortality in 120,000 Spinal Anesthetics. *(Q) Iqu n d'etat ns sur la m t l i e d ns xi 94* P mid Pa 1933

This article is based on data collected by 22 Roumanian surgeons in 3 university centers and 9 provincial clinics. The authors point out that spinal anesthesia has definite indications and contraindications. They list the contraindications as follows: (1) massive hæmorrhage, shock, and anemia; (2) heart lesions with poor compensation; (3) hypotension; (4) acute toxæmia (intestinal obstruction with toxæmia and hypotension or uræmia) and (5) septicæmia.

The statistics reviewed include all deaths that have occurred during the time that spinal anesthesia has been used. The number of deaths was greatest in the beginning when the contraindications were less clearly understood and the technique was not so good as it is today. Exact determination of the mortality of spinal anesthesia is difficult because of the different techniques used by the surgeons in the different localities. In 2,467 cases of spinal anesthesia collected by Forgue and Basset in 1928 from all over the world there were 69 deaths.

In the 12,037 cases reviewed by the authors which represent the combined figures of 22 surgeons there were 38 deaths (1 death in each 315 cases). In 33 cases the causes of death were as follows: cardiovascular collapse 23 cases, meningitis 5 cases, respiratory failure 4 cases, and cystitis 1 case. The time of death in these 33 cases was as follows: at the end of the intraspinal injection 7 cases, during the course of the operation 12 cases, four hours 7 cases, and after twenty

The mortality was no higher if it was not lower than that of chloroform anesthesia. In a series of 3,650 spinal anesthetics induced in children from four to five years of age which were recently reported by Balassaco there were no deaths.

If the contraindications are considered carefully in each case and the patient is watched not only during the operation but at least twenty-four hours afterward so that adrenalin, ephedrine, lobeline, or carbon dioxide may be administered promptly the mortality can be kept very low, particularly since



less toxic anæsthetic substances have come into common use and ephedrine is given to prevent hypotension

MARSH W POOLE, M D

Bakay, L Local Anæsthesia in Surgery (*Die örtliche Betäubung in der Chirurgie*) *Orvosképekés,* 1933, xiii, 586

This is a report of experiences in the induction of 17,000 local anæsthesias in the author's clinic

Novocain is the least injurious of the cocaine derivatives Its wide use is based on the fact that Braun began his experiments with this preparation The author has returned to the use of novocain after numerous experiments With regard to the recent constant increase of propaganda for novocain substitutes, the author states that such substitutes should be used only if they possess advantages over novocain in all respects or serve better for some particular purpose Percain has the greatest anæsthetic power with the longest duration It is readily sterilized and is bactericidal On the other hand, it is more toxic and causes more local tissue damage than novocain Pantocain is no more toxic than novocain, is readily sterilized and combined with adrenalin, and causes minimal tissue irritation, but its anæsthetic action is slower, and it increases the tendency to bleed in the field of operation Novocain produces no serious toxic manifestations, and causes only transitory cerebral anæmia, palpitation, and vomiting in the cases in which, for some reason, it enters the circulation Tissue damage is sometimes seen after the use of novocain-adrenalin solutions, but it is superficial and limited chiefly to the margins of the wound In some cases an idiosyncrasy of the patient such as a tendency toward angiospasm must be considered

In the author's material it was found that when local anæsthesia was used the incidence of pulmonary complications was reduced and the pulmonary complications which developed were much less severe With regard to the incidence of throm-

bosis and embolism, it was noted that of 9,829 operations performed between 1915 and 1922, thrombosis occurred in 8 (0.08 per cent) and fatal pulmonary embolism in 2 (0.02 per cent), whereas of 8,688 operations performed between 1923 and 1927 thrombosis occurred in 39 (0.44 per cent) and embolism in 11 (0.12 per cent) During these periods the relative frequency of the use of general and local anæsthesia remained unchanged Fatal embolism occurred most often after hernia operations, all of which were done under local anæsthesia It was next most frequent after extensive operations for varicose veins, all of which were done under general anæsthesia The author agrees with Finsterer that the so-called operative shock following laparotomies performed under general anæsthesia never occurs when local anæsthesia is used and therefore a toxic action must be ascribed to the narcosis After prolonged operations, acidosis occurs also after local anæsthesia

Premedication with hypnotics does not decrease the value of local anæsthesia Nevertheless, the author abandoned the use of scopolamine many years ago because it lowers the blood pressure Recently, good results have been obtained with scopolamine-eucodal-ephedrin Basic narcotics, with the exception of pernocton, are also used

A needle devised by the author for splanchnic anæsthesia is described and shown in an illustration, also a needle for infiltration of the abdominal wall Contrary to many surgeons, Bakay has noted no inadequacy of paravertebral anæsthesia However, he states that a certain skill is required for conduction anæsthesia After the abdominal cavity has been opened the pelvic organs are anæsthetized by injecting the solution into the triangle between the left and right common iliac veins In this way the conduction of the presacral nerve and the hypogastric plexus is interrupted

An important advantage of local anæsthesia is more careful handling of the tissues during operation

VON LOBMAYER (Z)

# PHYSICO-CHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Deiling S. Roentgen Therapy of Inflammatory Lesions in the Region of the Face (De Roentgen th ap. tzu ndl ch. E k nungen m B. re h des Ge chts) 1933. Leipzig. Dietrich

During the nineteenth century it was generally believed that especially large and painful furuncles and most fluctuating furuncles of the face should be incised whereas the smaller ones should be brought to ripening by conservative measures such as the application of clay and acetate acid compresses. During the last decades however incision has been abandoned especially in cases of furuncles of the face and conservative treatment (the passive hyperemia of Bier, the injection of autogenous blood as recommended by Laeven, paracutaneous injections of protein vaccine therapy) has been used instead. Also soon after their discovery the X rays were employed with success in the treatment of furuncles (Morton 1903, Ellner 1907) and their application was recognized as a useful favorable method as early as 1914 (Schmidt). This treatment is followed by general quick softening and rapid subsidence. According to Schreuss (1920) irradiation is of great importance also in the prevention of recurrence.

On the basis of an experience of years Heidenhain and Fried in 1924 recommended X ray irradiation for the treatment of pyogenic infections of all types. In furuncle of the face one irradiation is usually sufficient to cause central softening of the focus of infection and subsidence of the edema. Of fourteen cases of furuncle of the face which had not been treated previously seen reacted excellently. In seven others a good result was distinctly evident. Death occurred only in two cases in which an operation had been performed previously elsewhere. The minimal superficial dose was 50 per cent and the maximal superficial dose was 25 per cent of the skin erythema dose but the authors believe that 20 per cent of the skin erythema dose is most dependable. Emmerich obtained healing of furuncles of the face at the latest after three or four days by irradiation with one tenth of the skin erythema dose with the use of a hard filter. In 1930 Fried recommended 100 r as the average dose. He irradiates from one to three times at intervals of from six to eight days using a filter of 0.5 mm of zinc or copper plus 5 mm of 5 mm of aluminum. He claimed successful results in 95.5 per cent of cases of furuncles of the face. A successful result consists of subsidence of the pains, improvement of the general condition and resorption or accelerated resolution of the focus of infection. These results have been confirmed by many roentgenologists (Lukowsky, Berndt, Kramer, Kalk,

brenner, Abbati, Leucutia, Buzello). Otto has used considerably larger doses (350 r with a filter of 3 mm Al) with good results. In addition careful nursing and protective therapy are necessary as was emphasized especially by Kingreen and Hofelner.

Heidenhain, Schueller and Desjardins have found early irradiation most successful whereas Schreuss believes that the best results are obtained only when the treatment is given in the stage of full ripening i.e. eight days after the beginning of the infection. Knoefach obtained the best results from irradiation during the stage of inflammatory infiltration. Light and Sosman believe that the sixth day is the most favorable time for the treatment.

Of twenty nine cases of carbuncle Otto obtained good results in twenty seven. In two cases of carbuncle of the temple the effect of the treatment appeared to be unfavorable (large central necrosis, prolongation of sloughing and delay of healing). According to Seemann a trial with irradiation therapy should be made routinely in cases of furuncles especially furuncle of the face as long as no unusual circumstances demand immediate operation. In the Roentgenological Institute of the Surgical Clinic of the University of Leipzig irradiation with hard filtration was given in one or two sittings at intervals of from one to six days. The dose was usually 30 per cent and occasionally from 10 to 50 per cent of the skin erythema dose. Twenty six patients with mild or severe furuncles of the face were treated. In addition to the X ray irradiation and the general measures heat was applied by means of the Still lamp and covering with an inactive ramified rubefacient ichthyol ointment. Used in this treatment incipient furuncles were always resolved, the pain was quickly relieved and the temperature fell to normal within from twenty four to forty eight hours. The radiation had no untoward effects. In a large number of cases the healing process seemed to be definitely accelerated. While recurrences were not prevented the reabsorption was brought about quickly by early renewed irradiation. Of twenty six cases rapid complete healing resulted in seventeen and a distinctly favorable influence was apparent in five. In four (one diabetes) the condition was influenced only slightly. One patient with a carbuncle of the upper lip died from pyemia three days after the irradiation.

The incidence of successful results is given by Heidenhain as 97 per cent, by Seemann as 100 per cent, by Lukowsky as 70.6 per cent, by Light as 97 per cent, by Fried as 95.5 per cent, and by Baensch as 84 per cent.

In conclusion the author describes experiments carried out to study the biological course of healing under X ray irradiation. ARTURUS HINTZE (Z)

## RADIUM

Holthusen, H. Comparative Researches on the Action of Radium and the Roentgen Rays (Vergleichende Untersuchungen ueber die Wirkung von Roentgen- und Radiumstrahlen) *Strahlentherapie*, 1933, xvi, 273

In a comparison of the action of roentgen and radium rays three variables must be especially considered: the different wave lengths, the duration of the action of the rays, and the spatial distribution of the doses. So long as it was impossible to measure the gamma rays, like the roentgen rays, in r units, the doses of roentgen and radium rays capable of producing the same amount of injury to the cells of ascaris eggs were used as the basis of comparison of erythema production. Scarcely any difference was found in the degree of erythema produced by doses which had shown the same cell-injuring action in the experiments. After it became possible to measure the gamma rays in r units with the aid of a photographic method, comparative experiments could be made on this basis.

While the erythema from roentgen irradiation was more distinct at first, the erythema from the third wave of radium was about 20 per cent more marked. Observations of the epilation action showed a slight advantage in favor of radium. Experiments on ascaris eggs showed almost equal results with roentgen and radium rays, with a hardly appreciable difference indicating that the effect of radium was the stronger. When roentgen rays were used, an influence on the course of the injury curve from quanta of various sizes could not be established. No difference in the action of quanta of different sizes could be found even when this was investigated in the smallest spaces, in the chromosomes of the cell. The form of the injury pictures remained the same whether the ascaris eggs were treated up to the same degree of injury with beta, roentgen, or gamma rays, whereas a marked difference between

the action of ultraviolet and roentgen rays was noted. The experiment therefore provided no basis for the assumption of a difference in the mode of action of radium and roentgen rays. The action is quantitatively proportional to the number of electrons formed. However, the time of application of the doses is of great importance.

The total doses which lead to erythema when the afflux is from 0.5 to 500 r per minute are reported. Curves for the production of the erythema of epidermitis sicca, the tolerance dose, and the epilation dose are presented. The less the intensity of the irradiation, the larger the dose essential for the production of erythema. Whereas tolerance, erythema, and epilation doses approach one another more and more closely with high intensities, they run far apart with decreasing intensities. The epilation curve is the flattest. Cumulation is greatest in the hair papillae. A further illustration shows how these curves would meet with Mutcheller's dose in infinity. It is important that the doses producing erythema and connective tissue injury deviate to the same degree as the epilation and erythema doses. This deviation is responsible for the change in the quality of the action of the irradiations with the intensity. What applies to protraction applies fundamentally also to fractioning.

From clinical observations it may be presumed that continuous irradiation with low intensity gives the best therapeutic results. On the other hand, the disadvantage of the non-homogeneous spatial distribution of the dose of radium is of great advantage. It permits the administration of extremely large doses to very small areas. The great advantage of radium lies in the possibility of spatial concentration of the action of the rays and contact irradiation in addition to the possibility of continuous irradiation with low intensity. The determination of the best temporal conditions for influencing the disease focus will yield the best results.

BRAUN (Z)

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

**Tittel D.** The Development of So Called Caries in Teeth in Dermoid Cysts of the Ovaries (Ueb. d. Entt. hung de sog. nan te. t. a. san. Zaeh. n. in De mo cysten der Ov. n. n.) *ij. r. Z. A. l. e. k.* 1933 li 299

From his studies the author draws the following conclusions:

1. Defects of the crowns of teeth found in dermoid cysts of the ovaries are not due to true caries but are phenomena of resorption.

2. With regard to the genesis of the resorption phenomena there is no difference between a tooth found in a dermoid cyst and a tooth in the mouth. In both there are mesenchymal reactions, such as under physiological conditions (milk teeth) and pathological conditions (retention) cause the hard substances of the tooth to undergo resorption and softening.

3. The theories previously advanced to explain the resorption processes occurring in oral teeth (the so called inflammatory theory, the foreign body theory and the implantation theory) must be rejected as explanations of the causation of these phenomena. They are insufficient to explain the resorption processes observed in the oral teeth or teeth found in dermoid cysts.

4. Wherever a tooth is formed, resorption processes occur when the physiological equilibrium between the mesoblast and the parablast is disturbed unfavorably for the parablast. A possible cause of resorption processes in a tooth contained in a dermoid cyst is a dystrophy of the parablast setting up the tissue reactions of the vascular connective tissue which cause disintegration of the hard substances of the tooth.

5. According to the findings of histological examination the resorption processes occurring in a tooth contained in a dermoid cyst occur before penetration of the tooth into the lumen of the cyst. Therefore the decalcifying action of the acids present in the cyst contents cannot be the primary cause of the defect. The possibility that decalcification so produced may act secondarily to enlarge a defect already present must be admitted theoretically but in the case reviewed this action was not observed.

HANS O. NEUMANN (G)

**Mankin W. R. and White A. M.** The Chemical Analysis of New Growths Correlated with Their Histological Examination. *J. d. J. A. l. e. k.* 1933 li 78

The author determined the sodium potassium calcium-chloride and nitrogen content of ne-

plastic tissue to see whether an outstandingly high concentration of any one or all of these ions occurred. The pathological nature of the various new growths was carefully determined by both qualitative and quantitative methods. Small pieces of the tumor tissue were embedded and sectioned and the remainder used for chemical analysis. By cutting sections of uniform thickness and then counting from 50 to 100 fields in each section the percentage of tumor tissue could be determined fairly accurately. As the growing neoplasm is accompanied in its growth by various other tissues such as vascular stroma and inflammatory tissue the non-neoplastic tissue must be considered in the estimation of the amount of tumor tissue. Further difficulties are encountered when it is desired to compare the results of chemical analysis of neoplastic tissue with those of chemical analysis of corresponding normal tissue. The epithelial new growths cause the least difficulty in this respect because they arise from an already highly specialized tissue. Sarcomata frequently arise from connective tissue.

The second part of the article gives a summary of work done in recent years which indicates that the various underdiscussions have a very definite physico-chemical rôle modifying the properties of the organic matter of the cell. The colloidal protoplasm of the cell is able to re-create its complex chemical structure and also to change its composition with reference to a basic element such as nitrogen. After reviewing the colloidal chemistry of the cell the author states that to a large extent the properties of a living tissue depend on the types and concentration of salts both within and outside of the cell but at present we cannot know what proportion of ions is within and what proportion is outside. It is possible to give only an analysis of the tissue as a whole together with its pathological analysis.

which indicates the varying types of tissue present in the specimen examined. Increased cellularity in general is accompanied by an increased potassium content. A fact substantiating the view that potassium is contained mainly in the cells of the tissue. The more rapidly growing tumors tend to have a higher concentration of potassium than the more slowly growing tumors. Like wise tumor cells show an increased concentration of nitrogen. In the mineral content of individual tumors of different types and of the same type a marked variation is found. In the series of breast tumors the sodium and chloride content are approximately the same in individual cases.

The amounts of chloride, potassium, calcium, sodium and nitrogen and the proportions of tumor cells, fibrous tissue and other types of cells in various kinds of tumors are given in tables and the

pathological findings in 29 cases are summarized  
CLARENCE C REED, M D

Murray, J A The Bearing of the Experimental Induction of Cancer on Our Conceptions of Its Nature and Causation *Glasgow M J*, 1934, *CLXII*, 1

The author has confirmed the work of Jensen which indicates that if the cells of newly transplanted tumor material are disintegrated before their introduction, no growths are produced This observation supports the theory that parenchyma cells constitute the essential part of a malignant new growth, and that the peculiar properties of the tumor are due to cellular differences between the parenchyma cells and the corresponding normal cells of the body Whether the growth is a mammary carcinoma, a squamous cell carcinoma of the skin, or a spindle-cell, a melanotic, or a mast-cell sarcoma, each strain remains distinct in structure, cell form, and rate and habit of growth

No structural or functional difference has been found which separates malignant new growths definitely from the corresponding normal tissues of the body The difference is that of behavior which is progressive growth continuing as long as the bearer lives and, as transplantation experiments show, is apparently unlimited The peculiarities of behavior of new growths and their emancipation from the control which holds the elements of the body together as a fairly harmonious whole may be brought about by the combined action of more than one functional derangement working together to produce effects greatly in excess of the sum of their individual consequences  
M HERBERT BARKER, M D

#### DUCTLESS GLANDS

Kennedy, F S, and Fisher, J H Syphilis of the Pituitary Body *Am J Syphilis*, 1934, *LVIII*, 12

The authors report a case of syphilis of the pituitary body discovered in the course of a routine autopsy procedure The subject was a woman fifty-eight years old who had suffered from acquired syphilis manifested by positive physical and serological findings over a period of years No clinical evidence of pituitary disease had been noted Death occurred suddenly, and autopsy was performed three hours later The surface findings at autopsy consisted of multiple healed cutaneous "tissue paper" scars over both arms and scattered diffusely over the trunk, and palpable right cervical, axillary, and inguinal lymph glands The aorta showed a syphilitic aortitis On section of the brain an extensive hæmorrhage was found to have torn completely through the right internal capsule and to have extended into, and filled, the right lateral ventricle with clotted blood The right thalamus was partially torn across and displaced laterally into the lateral ventricle The hæmorrhage had torn through the septum lucidum, extending into the left lateral ventricle The pituitary body was not weighed It

appeared to be of normal size and contour Grossly, no abnormalities were noted There was no distortion of the sella turcica

Microscopic examination revealed syphilitic aortitis and gummata of the liver and pituitary body Approximately, one-third of the anterior lobe of the pituitary body was involved by a gummatus process This consisted of numerous milium gummata, most of which were conglomerate, forming confluent areas of newly formed tissue Toward the periphery of the lesion, however, small isolated gummata were observed The lesions extended to a point near the pars intermedia, but the pars intermedia and posterior lobe were not involved At one point the gummatus process extended outward almost to the capsule However, the capsule was intact The gummata were composed of collections of epithelioid cells with no evidence of caseation Narrow zones of lymphocytes surrounded most of the gummata Many quite large, well-formed giant cells were found in the gummatus area In the involved area nearly all of the acinar tissue had been destroyed and replaced by newly formed tissue which had increased the bulk of the pituitary body little, if any

As diabetes insipidus is the most common clinical manifestation of syphilis of the pituitary body, a Wassermann test of the blood and spinal fluid should be made in cases of diabetes insipidus The next most common manifestation is the syndrome of dystrophia adiposa genitalis Sometimes this has been present with diabetes insipidus Various other clinical manifestations such as hypophyseal cachexia, special ocular signs, deformity of the sella turcica, hypotonia, symptoms of pituitary tumor, and mental disturbances such as agitated depressions and unstable emotional reactions have been recorded Syphilis of the pituitary body has frequently been associated with syphilitic lesions of the basal ganglia, spinal cord, and meninges In congenital cases, infantilism and dwarfism have been observed There may be an intimate relationship between intranasal chancres and syphilis of the pituitary body

Thirty-six cases of acquired syphilis of the pituitary body which were confirmed by autopsy and nineteen cases in which the diagnosis was based on clinical findings only are reviewed from the literature Thirty-four cases of the congenital type were found

The treponema pallidum has very rarely been demonstrated in the pituitary body in cases of acquired syphilis In cases of congenital syphilis it has been found there much more frequently In the case reported by the authors no attempt was made to find it because the tissues were fixed before the syphilitic nature of the condition was recognized Sections stained for the tubercle bacillus failed to show its presence

The importance of routine studies of the pituitary body at autopsy in all cases of syphilis is stressed

CHARLES BARON, M D

B. Iogorodskij, V. The Clinical Features of the Parathyroid Glands According to von Oppel's Material (Doklady Akademii Meditsinskikh Nauk SSSR, 1933, 11, 22, 3).

This article is a short résumé of a quite large number (at least twenty eight) reports of clinical investigations on the physiopathology of the parathyroid glands which were carried out following the lead of von Oppel. The investigations began with measurements of the blood calcium in surgical tuberculosis. Since in most of the cases a fall in the blood calcium was demonstrated, von Oppel tried to combat the fall by the subcutaneous implantation of bone. Special control experiments (Schmidt and Obratcov) demonstrated that such implants cause an elevation of the blood calcium and therefore explain the beneficial local and general effect of the Albee operation. Achutin and Andrejev determined that sepsis produces a marked disturbance of the calcium balance and parathyroid function. This observation explains the use of calcium therapy in sepsis. In cases of fracture, Gusarov observed regular changes in the blood calcium which resulted in

delay of callus formation in hypoparathyroid and hypocalcemic conditions. Under such conditions injections of bone meal and parathyroid transplants have proved beneficial. In latent spasmophilia and fully developed tetany, bone implants and parathyroid transplants have been employed with good results by many of von Oppel's pupils. Bone implants (boiled beef bones) may be used with good results also as prophylaxis in cases in which total extirpation of the thyroid is done for carcinoma.

Hypercalcaemia, shown by von Oppel to be the cause of ankylosing polyarthritis, is being combated by him and his pupils by numerous parathyroidectomies. Although the ankylosed joints do not become mobile again, the beginning stiffening is influenced favorably.

Von Oppel had assumed that parathyroid function is regulated by the adrenal hormone. Recent experiments have convinced him that injections of adrenalins have no definite influence on the normal calcium picture. However, a low blood calcium will be regularly raised and an abnormally high blood calcium will be regularly lowered by such injections.

V. I. ZITO (Z)

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NOTE—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

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## GYNECOLOGY

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*The men tricycl* dth l; de t t f flet rne mucosa I GORLICH M nat schr f G bu tsh u Gyra k 933 xxv 23

A cold light f inspectu n nd transill ma t n of the cervix S G BEKOV Am J Ob t & Gyn c 934 x 1 7

F scial plasty for r tne ret flexi H LAMPEN SCHERF 933 C l gne Disse t t n

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Histopathology of th t r emu sa R T DEZ MAN 933 Lep g Thiem

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The t atm nt f h on c c r e t s by l c t o coagul ti n r ult N ARENAS d A EMANUEL S mana m éd 933 xl 2675

Tub cul i f th r vix B D DEUX Gyné l g 933 xxxi 595

Th t atm to f e r c al n w th d nd eat ge r dato A KURACE NOV V t k Rentg n l 933 x 6

Clin cal d f f t ual diagn si off c pl k i z r s n the cerv H HINSELMANN Z nt l bl f Gyn l 933 p 168

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U t r n e c a n e a p o t e g the p d f m Ju e 97 c Jun 93 C G JOHNSON d C H T RONE S g l Gynec & Ob t 934 l 3

Is t p o bl t u n p o e the l k a d l a g th bounda e to the early diagnosis f ca moma f th

uterus? G ROESSLER Mon tschr f G b r t h u Gynack 933 xc 76

A further contrib t on n the recog ti n f beginning an ma f the cervix by colposcopy H H SELMAN Kln W h schr 933 xi 12

The ultim t tance f o l p sc p d gn of c r cinoma H HINSELMANN Z ntr l bl f Gyn l 933 p 10 2

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S m problem n radiation therapy f cancer ma of th r vix W P HEALY Am J Roentg l 934 xxi 60

Rad to therapy cancer ma f the corpus t i W P HEALY Am J Obst & Gyn c 934 xx xi 5

Can w combat ca r f the cervix w th rad m l n ? If ROTH Comptes e dus de la Soc f ang d gyné 933 u 7

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## Adnexal and Peritoneal Conditions

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INTERNATIONAL ABSTRACT OF SURGERY

## OBSMETRICS

## Pregnancy and Its Complications

Pregnancy and Its Complications

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## GENITO-URINARY SURGERY

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### Surgery of the Bones Joints Muscles Tendons Etc

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# International Abstract of Surgery

*Supplementary to*  
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# INTERNATIONAL ABSTRACT OF SURGERY

JUNE, 1934

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

Gallavresi, L. The Roentgenological Study of Changes in the Temporomandibular Articular Interline (Studio radiologico di alterazioni dell'interlinea articolare temporo-mascellare) *Radiol med*, 1934, 11, 35

The author believes that in the roentgenological study of the temporomandibular region it is best to use both Koehler's position and a sagittal projection through the articular interline. He discusses the technique of these projections, shows them by roentgenograms, and cites clinical cases showing their value in clearing up the diagnosis of obscure lesions of the pharynx, head, and sinuses.

EUGENE F. LEDDY, M D

### EYE

Duggan, W. F. Visual Results in Cases of Intra-Ocular Foreign Body, A Study of 270 Cases *Arch Ophthalm*, 1933, 1, 768

In 1932 Kieble stated that of most importance in every case of intra-ocular foreign body are the degree of vision retained and the length of time the foreign body was present in the eye. He said that an estimate of vision six months after the injury is not significant, that light perception or vision of fingers at a few feet is nothing of which to boast, and that the longer the period of time elapsing after removal of the foreign body, the greater the diminution of vision. He concluded that the final estimate of disability should be delayed at least two years, and that the patient should be re-examined periodically.

Duggan reports the visual results in 270 cases of intra-ocular foreign body from the private practice of Arnold Knapp previous to 1920 and the Herman Knapp Memorial Eye Hospital, New York, in the period from January, 1920 to December, 1931, inclusive. One year was taken as the minimum follow-up period of the definitive series, because if two years had been chosen the number of available

cases would have been reduced by 50 per cent. Two hundred and sixty-one of the patients were males. The extreme limits of time during which the foreign body was in the eye before removal were two hours and twenty years. In the discussion the cases are divided into 8 groups as follows:

Group 1. Cases in which the patient was followed up less than one year after the removal of the foreign body. In this group there were 175 cases in which the patient was followed up for from one week to ten and a half months. However, when the foreign body had remained in the eye for more than four months it had probably caused sufficient degeneration to render the true visual results unobtainable. In 16 cases the foreign body had been in the eye for from four months to twenty years. Of these, vision was less than 20/200 in 62.5 per cent, 20/200 in 12.5 per cent, 20/20 in 18 per cent, and unrecorded in 6.3 per cent. In the 159 other cases there were 38 enucleations. Of the remaining 121 cases, vision was lost in 9.1 per cent, less than 20/200 in 23.1 per cent, from 20/200 to 20/50 in 14.9 per cent, from 20/40 to 20/30 in 19 per cent, 20/20 in 19 per cent, and not recorded in 14.9 per cent. The complications included cataract in 18 cases, aphacia in 27, secondary membrane in 5, detachment of the retina in 8, vitreous exudate in 16, siderosis in 1, a scleral wound in 23, and phthisis in 8.

Group 2. Cases in which the patient was followed up for one year or longer after removal of the foreign body. In this group there were 53 cases. In 10, the foreign body was in the eye for more than four months. In 8 of these 10, vision was less than 20/200, in 1 it was 20/70, and in 1 it was not recorded. Complications included cataract in 2, detachment of the retina in 4, vitreous exudate in 1, and siderosis in 6. Of the remaining 43 cases in this group, vision was lost in 2.4 per cent, less than 20/200 in 28.6 per cent, from 20/200 to 20/100 in 9.5 per cent, from 20/70 to 20/50 in 7.1 per cent, 20/40 in 7.1 per cent, 20/30 in 16.7 per cent, and 20/20 in 28.6 per cent. The complications included cataract

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# SURGERY OF THE HEAD AND NECK

marked swelling and inflammation. The limbus is often raised in a red ring around the diseased area. This zone of scleritis and episcleritis may early suggest sclerosing keratitis, but in the latter condition ulceration of the cornea occurs rarely if ever. Mooren's ulcer usually requires from three to six months to cover the cornea. The histological picture is that of a chronic infiltration, chiefly with round cells, of the anterior third or two-thirds of the cornea. The loss of substance usually occurs in the anterior third, and there is replacement by a thin layer of vascular connective tissue except near the advancing border, where the infiltration extends under the epithelium and into the stroma of the previously uninvolved cornea. Granulation tissue is present over the sclera beyond the limbus, and there may be loss of substance by a thin layer of vascular connective tissue except near the advancing border, where the infiltration extends under the epithelium and into the stroma of the previously uninvolved cornea. Granulation tissue is present over the sclera beyond the limbus, and there may be loss of substance by a thin layer of vascular connective tissue except near the advancing border, where the infiltration extends under the epithelium and into the stroma of the previously uninvolved cornea. Granulation tissue is present over the sclera beyond the limbus, and there may be loss of substance by a thin layer of vascular connective tissue except near the advancing border, where the infiltration extends under the epithelium and into the stroma of the previously uninvolved cornea.

The condition has been ascribed to (1) the presence of an infectious agent, (2) a general state of malnutrition, and (3) a trophic disturbance due to disease of the fifth nerve. However, there is no conclusive support for any of these theories. The prognosis has been considered almost hopeless. The treatments reported have included the use of foreign protein, cod-liver oil, phototherapy, and cauterization. Krassó reported five cases thought to be abortive forms of Mooren's ulcer in which rapid healing occurred under treatment with Bucky's border rays (Grenzstrahlen), but Gifford believes that they were not true cases of Mooren's ulcer.

Attempts to produce hypotony have been rarely reported. Fuchs reported two cases with successful results, one in which a small incision was made in the advancing border and re-opened five times in fourteen days, and another in which peripheral paracentesis was performed fifteen times. In the first case vision of 5/8 was obtained, while in the second vision was limited to the counting of fingers. Wibo employed puncture with the actual cautery successfully. In three cases Nechitch obtained successful results by the use of the cautery to produce a fistula. The fistula remained patent fourteen days.

The use of a conjunctival flap has been tried, but has often failed. Kreker attributes the failures to the use of a too-small flap, retraction of which again exposes the advancing border of the ulcer. He has reported three cases in which the ulcer was successfully treated with a corneal flap from above which was large enough to cover the cornea completely. After two or three months a small opening was made in the conjunctiva over the unaffected cornea. The flap then retracted, exposing all of the unaffected cornea. There was no recurrence. In one case vision was 1/4, but in the two others it was less because of the late stage at which the operation was performed.

Gifford reports three cases in which healing of the ulcer was effected with good visual results. In two, a delimiting keratotomy was done, and in one a conjunctival flap was used. The keratotomy consisted of an incision 4 mm. long, just central to the advancing border. The wound was kept open for ten days.

In the two cases in which this operation was done vision was 20/50 and 20/30 respectively. In the latter case there was at first a corneal astigmatism of 7 diopters, but this disappeared in two months. In the third case preliminary treatment with trichloroacetic acid and phototherapy seemed to arrest the ulcer for a week, but at the end of that time the lesion became active again. It was then thoroughly touched with trichloroacetic acid and a conjunctival flap covering the ulcer and a good margin beyond, but not covering the entire cornea, was turned down. Vision with astigmatic correction was 20/40 after three months. So far, the flap has not been disturbed.

Delimiting keratotomy is a safe procedure and less disfiguring than the use of a flap. If a flap is employed, it should cover the whole cornea or extend well past the advancing border of the corneal ulcer, and should be made adherent to the ulcer by the application of trichloroacetic acid. The effect of delimiting keratotomy seems to be due to the increased nutrition and supply of antibodies resulting from a reduction of tension, and perhaps also to the epithelial barrier formed at the site of incision, an effect which is of value whether the disease is infectious or degenerative. I. S. PLATT, M.D.

Igersheimer, J. The Pathology of Tuberculosis of the Anterior Uvea. *Arch. Ophthalm.*, 1934, 11, 119.

The principal histological proof of tuberculous infection is the presence of the epithelioid tubercle. This occurs most frequently in the uvea. The great difference in reaction to invasion of the tubercle bacillus would be of great importance if it were possible to demonstrate the presence of the bacilli in all tissues. The reaction is of three main types: (1) acute and subacute, (2) chronic and recurrent, and (3) special types.

The acute and subacute reaction occurs in persons under twenty years of age, affecting one eye for weeks or months. The anterior and posterior chambers are usually involved, but not the cornea, choroid, or retina. Epithelioid giant cells and lymphocytes predominate. Hypopyon, caseation, and perforation occur, and tubercle bacilli are frequently found.

The chronic types of reaction occur in adults and involve both eyes. Epithelioid cells are not found regularly, and caseation and perforation are rare. Other tissues of the eye are involved. The tubercle bacilli are seldom found.

The special types are rare. In some cases the necrotic process is widespread, while in others a generalized sclerosing tuberculous large-cell hyperplasia in the eyes, bones, skin, lungs, and lymphatic glands occurs. VIRGIL WESCOTT, M.D.

Walker, C. B. Retinal Detachment. *Am. J. Ophthalm.*, 1934, xvii, 1.

Diathermy has come to be one of the most widely used methods of treating retinal detachment although the older Gonin and Lindner-Guist methods

It may have their place and in some cases a combination of methods may be indicated. Microprotection yields the highest degree of successful results with the least labor and trauma and the lowest incidence of unfavorable sequelae than any other method as yet adopted. Very small steps are necessary on microprotection; the pins from going too deep but in the process used by the author it is not necessary to perforate the sclera as in the case of microprotection. With the use of the author's microprotection procedure the sclera receives a small degree of treatment (Larsson effect) which widens the mouth of the outlet and thereby produces a result more prolonged drainage. As a result of the use of the current must be used to pull out insulated pins especially multiple types. Single non insulated pins which can be inserted to aid in the removal are to be preferred. The use of the latter prolongs the period of time only slightly. In an unobstructed area twelve pins can be placed in about a minute.

Iridium hardened platinum is the best metal for detachable microprotection pins because it can be perfectly cleaned by heating it to redness in the Bunsen flame. It gives off no oxides and it does not disintegrate by charred particles left in the sclera. It can be used repeatedly without undergoing deterioration from cleaning or sterilization. The use of pins without threads at the points of insertion and the breaking of insulation on the flange during use are numerous. When the count fails to check and it is uncertain whether the lost pin is on the orbit or on the cornea, ray examination may be necessary. Conveniently threaded iridium platinum microprotection pins have been found safe and satisfactory.

WILLIAM A. MANN, JR., M.D.

Land, R. H. The Retention of Spontaneous Retinal Detachment. *Ch. Opht.* 1934, 33, 48.

Landner states that the cause of retinal detachment is a retinal tear and this can be on mechanical means. A model retina can be constructed by coating the interior of a round glass flask with a layer of cellulose containing enough aluminum powder to render it more visible and somewhat adherent. If an artificial hole was protruded in the flask made in this layer and the flask rotated, the detachment would occur. When the motion of the flask ceases the detachment tends to flatten out. This principle has been utilized in the case of bivariate eye. Lochblum or hole spectacles which are some contraction of the solid causes the retina to buckle so that it will not return to the normal position on the detachment. The author believes that in retinal detachment there is a retraction of the choroid and ocular fluid is absorbed by the choroid and the retinal hole is absorbed by the choroid and eventually causing liquefaction of the choroid. After this has occurred the use of Lochblum will cause a definite flattening of the detachment.

The prevention of detachment requires prevention of the retinal tear. Predisposition to detachment occurs in glaucoma, myopia and senility. In these conditions as there is either detachment of the retina or laceration of the vitreous.

In an attempt to prevent the formation of a hole with subsequent retinal detachment the eye may be treated by one of the following four methods: 1. Interruption of the nerves of the ocular muscles. This procedure would have a lasting and complete effect but because of complications such as the production of ptosis and paralysis of the sphincter of the pupil and the ciliary muscle it is not advisable.

2. Division of pieces of the muscle performed in two situations. This would be slightly less effective and would be objected to by most patients. It might be recommended in certain cases of inoperable or nonocular detachment.

3. Iridectomy and retraction of ocular muscles by surgical means. This method is simpler and more satisfactory. Glasses with strabismic peripheral aberration may be prescribed. In myopia, for example, spectacles with lenses may be prescribed. They should be inserted in the frames with the surface re-etched.

4. The use of Lochblum with the posterior surface of the bared light milk glass containing a central clear area of 4 or 5 mm. in diameter. These spectacles cut down the peripheral field. Their use is less desirable than the third method. Landner has never performed a prophylactic operation but believes that it may some day be done when the danger of detachment is imminent.

WILLIAM A. MANN, JR., M.D.

Stapland, C. D. Retinal Detachment and Its Treatment by Surgical Methods. *Arch. Ophth.* 1934, 33, 48.

Of 435 cases of simple retinal detachment seen at the Royal London Ophthalmic Hospital in the period December 25, 1930, and January 1, 1931, 221 were operated upon by the impunctate method of Gunn, 9.6% the Landner Cui multiple trephining type of operation and 19.9% operative method of Landner. In 9.6% no operative measure was employed. The patients ranged in age from eight to eight and a half years. Two hundred and sixty-two were males. Sixty-two and three tenths percent of the detachments occurred in myopia and sixty percent of the detachments occurred in the detached. Thirty-one and one tenth percent of the detachments occurred in emmetropes and 6.6 percent in aphakia. In 6.6% cases the detachment was lateral. Trauma played a role in 43.0 percent of the detachments in emmetropes and in 15.5 percent of the detachments in myopes.

Of the 50 cases in which the retina was found in 6.3 percent of the cases. In 50.4 percent of the cases they were in front of the equator and in 23.8 percent they were multiple. There were 115 examples of round

holes, 113 cases of disinsertion or anterior retinal dialysis, 105 arrow-head tears, 20 radial slit-like tears, and 19 irregular rents. The temporal half of the globe was the most common site of tears, 79.6 per cent of the tears being in that region.

Of the 221 patients operated upon by the Gonnin method, 27.6 per cent were cured and 10.4 per cent were benefited. Of the cases in which the detachment had been present for less than six weeks, a cure was obtained in 40 per cent, whereas of those in which it had been present longer than six months a cure was obtained in only 10 per cent. In 62.3 per cent of the cases with a successful result, 1 ignition-puncture was sufficient. In 4.9 per cent, 3 punctures, and in 1.6 per cent, 4 punctures were necessary. Complications associated with this method included secondary rents, vitreous hemorrhage, traumatic cataract, and transient uveitis. The technique of Gonnin was followed except that after the first six months the galvanocautery was used instead of the Paquelin cautery as the latter was found unreliable.

Of the 79 patients operated on by the Lindner-Guist method of multiple trephining with a 1.5-mm trephine and the use of potassium hydroxide, 25.3 per cent were cured and 15.2 per cent were benefited. In 7 cases completion of the operation was prevented by early perforation of the choroid. Subtraction of these cases and of a few which were operated on by a modified procedure raises the incidence of cure to 31.7 per cent. Complications included secondary rents, vitreous hemorrhage, uveitis, vortex vein thrombosis, and subretinal hemorrhage.

The diathermy method advocated by Larsson includes superficial treatment of the sclera over the affected area and subsequent perforation of the sclera over the tear with the electrode or by means of a trephine opening. Of the 72 cases treated by this method, a cure was obtained in 47.2 per cent and improvement in 13.9 per cent. Except for a few secondary holes, complications were rare. The higher incidence of cure in the cases treated by the Larsson method of diathermy, the ease with which the method can be carried out, and the lower incidence of complications indicate that the Larsson method is the most satisfactory procedure for the treatment of detachment of the retina.

WILLIAM A. MANN, JR., M.D.

Pischel, D. K. Detachment of the Retina, Its Present Operative Treatment. *Am. J. Ophth.*, 1933, xvi, 1091.

Pischel discusses various types of operation for retinal detachment and reports the results of the Safar operation on fifteen eyes. He emphasizes the importance of exact localization of the retinal tear.

The Gonnin operation, which aims at direct closure of the retinal tear, requires only a simple armamentarium and is easily and quickly performed, but demands especially accurate localization of the tear. Other disadvantages of this procedure are burning of the retina, extensive scarring and sec-

ondary contracture with the formation of new holes, the sudden egress of subretinal fluid through one large opening, and the difficulty of using the procedure in cases with large holes or multiple tears.

In the Lindner-Guist operation, which aims at walling off the tear, the localization is easier, there is a possibility of including several holes in a single circle of exudate, and thorough drainage by many openings permits the retina to float back into the proper place. The disadvantages of the procedure are the very difficult technique which prolongs the operation, the difficulty of reaching back to the posterior pole, and the possibility of intra-ocular hemorrhage.

The Safar operation, which is also a walling-off procedure, has all of the advantages of the Lindner-Guist operation. In this procedure the retina is kept away from the choroid throughout the operation by unescaped subretinal fluid, being thus well protected from trauma, there is no possibility of intra-ocular hemorrhage as the vessels are thrombosed, and all parts of the eyeball are readily reached.

The Larsson operation requires no localization beyond a rough estimate and permits treatment of detachments in which no hole is found. The technique is simple. The disadvantages of the procedure are the single trephine hole for drainage, extensive destruction of the choroid and retina, extensive treatment of the sclera, and the uncertain trans-scleral dosage.

The cases reported included eight with an extremely unfavorable prognosis. In one of the latter the result was favorable, but in others the treatment failed. Of the seven favorable cases operated upon by the Safar method, a cure resulted in four. In a fifth the operation caused re-attachment of the separation retina, but a new separation occurred in another part of the eye. Exact localization was accomplished with the aid of the perimeter. Following the operation both eyes were bandaged for from eight to ten days, and after removal of the bandage stenopeic spectacles were worn for about three months.

WILLIAM A. MANN, JR., M.D.

Caelro, J. A., Malbran, J., and Balza, J. The Treatment of Retinitis Pigmentosa by Resection of the Cervicothoracic Sympathetic (Tratamiento de la retinitis pigmentaria por la resección del simpático cervico-torácico). *Rev. Asoc. med. argent.*, 1933, xlvii, 3403.

The authors report five advanced cases of retinitis pigmentosa which they treated by extirpation of the middle and intermediate cervical ganglia and the stellate ganglion and resection of the vertebral nerve. The first to resect the cervical sympathetic in retinitis pigmentosa was Royle. The only other similar attempts in this direction known to the authors are those of Meighan (one case) and Campbell. Royle resected the sympathetic trunk at the level of the second cervical ganglion in five cases. Meighan extirpated the superior and middle ganglia. Both surgeons reported striking improvement in the

M E MOR E M D

The author reviews the cases reported in the literature in which radium was applied externally and

LESLIE L McCO V D

In explaining the cystic degeneration and chiasm the authors state that the optic stalks have not yet closed in to become solid cords and that the central retinal vessels inside the optic stalks have not yet become incorporated into the optic stalk. Interference with proper closure of the fetal optic stalks leads to colobomata. In new of these facts the authors believe it is possible that abnormally placed optic stalks may become incorporated with the optic stalk in early embryonic life and that as a result a new growth may develop and that as a result an ependymal lining may be formed. This hypothesis is in agreement with the well known fact that tumors are caused by the multiplication of embryonic cells which become placed during fetal life. In this connection Chung speaking of the cranio-pharyngomata says "Under the same conditions are included those lesions which on the Cohnheim basis arise from some cell inclusions (anlage) in early embryonic life."

LESLIE L. McCOR M.D.

the cranio-pharyngiomas, which are included those lesions which arise from some cell inclusion in early embryonic life.

LESLIE L. McCOR M.D.



should be included in the extirpation. Following operation, X-ray treatment should be given in all cases.  
HOWARD A. MCKNIGHT, M.D.

Cohen, M. H. Leg Ulcers Due to Thyroid Dysfunction. *J. Am. Med. Ass.*, 1934, **CH**, 283.

A case of deep ulcerations of the lower extremities associated with myxœdema is reported. The administration of thyroid extract quickly healed ulcers that had persisted unchanged for six years.

The cutaneous changes in thyroid diseases are not well understood. A relationship between circumscribed myxœdema of the legs and leg ulcers of obscure etiology is suggested.  
SAMUEL KAHN, M.D.

Brazier, M. A. B., and Grant, F. M. The Relation of the Impedance-Angle Test for Thyrotoxicosis to Changes in the Basal Metabolism. *Lancet*, 1934, **CCXXVI**, 125.

It has already been shown that the impedance angle is unaffected by the ingestion of food, exercise, or menstruation.

In agreement with previous observations, the basal metabolic rate was found by the authors to be increased in the normal person by ephedrin, pilocarpin, thyroid extract, and thyroxin, but not by atropin or iodine. Of these drugs, only thyroid extract and thyroxin have an effect on the impedance angle. The authors therefore conclude that a change in the impedance angle is specific to a thyroid factor and is not affected by chemical stimulation of the autonomic system reacting on the basal metabolic rate.  
SAMUEL KAHN, M.D.

Wallace, H. L., and Wevill, L. B. Toxic Goiter: An Analysis of the Results of Surgical Treatment. *Edinburgh M. J.*, 1933, **XL**, 598.

This is a statistical analysis of 285 cases of toxic goiter treated by thyroidectomy at the Royal Infirmary, Edinburgh, in the period from 1922 to 1932. Follow-up information was not obtained in 34.

There were 6 female patients to 1 male patient. The histological diagnosis was primary toxic or exophthalmic goiter in 146 cases and secondary toxic goiter in 117 cases. The primary toxic goiter was most frequent in the twenty-ninth year of age and the secondary toxic goiter in the fortieth year of age. In both sexes and both types of goiter the duration of the symptoms ranged from thirty-five to fifty months. The severity of the symptoms was not radically different in the 2 types of goiter.

Subtotal thyroidectomy was done in 172 cases, lobectomy in 65, and removal of an adenoma in 21. In 21, miscellaneous operations were performed.

Of the 187 patients followed up, about 75 per cent are now in good health and able to perform their usual duties. In 48 per cent of 125 cases the exophthalmos completely disappeared. Only 3 patients showed evidence of myxœdema. Three others showed symptoms of parathyroid tetany.

Of the 285 patients, 35 (12.3 per cent) died as the direct result of operation.  
PAUL STARR, M.D.

Schreiner, B. F., and Murphy, W. T. Malignant Neoplasms of the Thyroid Gland. *Ann. Surg.*, 1934, **XCIV**, 116.

During a period of twenty years forty-two cases of malignant neoplasm of the thyroid gland have been recorded at the New York State Institute for the Study of Malignant Disease. These constituted 0.37 per cent of all cases of malignancy recorded during that period. Collier, Clute, De Courcy, Balfour, Speese and Brown, and Simpson are quoted as giving the incidence of malignancy in cases of thyroidectomy at from 1.2 to 4 per cent.

The average age incidence in the forty-two cases reviewed by the authors was fifty-two and six-tenths years. One patient was in the third decade, six were in the fourth, eight were in the fifth, nine were in the sixth, seven were in the seventh, ten were in the eighth, and one was in the ninth. The pathology of the tumors is discussed.

In all of the forty-two cases there was a history of previous thyroid enlargement. The duration of this enlargement ranged from one month to forty years and averaged four and ninety-seven hundredths years. In the cases of eighteen patients with far advanced malignancy biopsy was not done. Of fourteen of these who were treated by roentgen irradiation alone, eleven died within a year and two within two years. Of three who were treated by radium irradiation alone, two died within a few months and one is still living after four years. One patient who was treated by both roentgen and radium irradiation died in a few months, and one treated by roentgen irradiation is living at the end of one year. Eighteen patients had been operated upon radically before their admission. Of these, twelve were treated by roentgen irradiation alone, four by radium irradiation alone, and two by both roentgen and radium irradiation. Of the twelve treated by roentgen irradiation alone, two are alive after from one to two years, one is still living after four years, and one died after two years from cerebral hemorrhage. Of the remaining nine, seven died from the thyroid malignancy in less than a year and two after from three to four years.

In the authors' experience, malignancy of the thyroid is rare and usually fatal. The only curative procedure is early operation followed by irradiation. When clinical diagnosis of the condition is possible the case is usually hopeless and irradiation is only palliative.  
PAUL STARR, M.D.

Smith, L. W., Pool, E. H., and Olcott, C. T. Malignant Disease of the Thyroid Gland: A Clinicopathological Analysis of Fifty-Four Cases of Thyroid Malignancy. *Am. J. Cancer*, 1934, **XX**, 1.

The authors report a study of 42 cases of thyroid malignancy treated at the New York Hospital in the past thirteen years, during which period there were approximately 100,000 admissions and 855 thyroid specimens were examined. They studied also 12 specimens of thyroid malignancy from other sources. The ages of the patients ranged from twenty-two to



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sixty nine years and averaged forty eight and eight tenths years. Forty one of the fifty four patients were women. The previous existence of an adenoma was recognized as the essential factor in the development of the malignancy in 91.6 per cent of the cases. The tumors were of the following types: papillary adenocarcinoma, fetal adenocarcinoma, epidermoid carcinoma, giant cell carcinoma, small round cell carcinoma and sarcoma. Each type is discussed in detail and shown by photomicrographs.

A correct diagnosis is made before operation in only a small percentage of the cases as there are no clinical symptoms suggesting the nature of the tumor. The prognosis is definitely unfavorable. In the authors' opinion irradiation is the treatment of choice. Surgery is of little avail after the tumor has invaded the capsule of the adenoma or the parenchyma.

M HERBERT B. KEER, M.D.  
Burger H. A. Occluded Paralysis of the Vocal Cord  
J. L. S. & O. I. 1934 2145

The author discusses the syndromes of Collet Sicard, Jackson, Vernet, Schmidt, Aclis, Tapia and Villaret and points out the fallacy of each. He contends that the classification should be based on

the situation of the malady. He suggests the following classification.

A. Syndrome of the bulbar nerves. Paralysis of the vagus accessory of central and extra medullary origin connected with those of neighboring nerves.

B. The syndrome of the jugular foramen, thus named by Vernet. This includes only peripheral cases inside and outside the skull. It is a defined malady with a definite diagnostic significance. Not all three nerves need be completely paralyzed. On the contrary, every affection in or near the jugular foramen belongs to this group.

C. The syndrome of the parapharyngeal space. This is characterized by paralysis in the province of the ninth, tenth and twelfth cranial nerves and the sympathetic nerve. It is a low vagus paralysis; the situation of the malady being lower in the neck than in the syndrome of the jugular foramen. As a rule the eleventh cranial nerve and the palate are not involved. In some cases even the vagus may be unaffected.

D. The vocal cord diaphragm syndrome. This is a rare simultaneous paralysis due to the comparative proximity of the nerves involved.

NORMAN C. BULLOCK, M.D.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS, CRANIAL NERVES

Bykov, K. The Functional Relationship of the Cerebral Cortex to the Internal Organs (Funktioneller Zusammenhang der Hirnrinde mit den inneren Organen) *Iestnik Chir*, 1932, LXXVII-LXXXI, 12

The author reviews experiments carried out in Pawlow's school during recent years in a study of the conditioned reflexes of individual organs and of functions depending on many organs such, for example, as the function of the consumption of oxygen. From these studies three main problems arise: (1) the determination of the possibility of the development of conditioned reflexes affecting the kidneys, liver, and spleen and thereby explaining the relationship of these organs to the cortex of the brain, (2) the determination of the possibility of the development, on a function, of conditioned reflexes having their origin in irritations taking effect in the internal organs, and (3) the demonstration of the internal mechanism of the conditioned reflex activity of the internal organs or general functions such, for instance, as oxidation.

With regard to the first problem, the author states that he, Alexeev, and Berckmann have been able to show that when, in the case of a dog whose ureters have been brought to the surface of the body, the introduction of water into the stomach or rectum is followed by diuresis and this experiment is repeated from eight to fifteen times, the diuresis will occur later without the administration of water if the dog is again placed under the same conditions. They found also that if a certain sound is made at the time the water is introduced at first, the diuresis will be produced later merely by this sound without the introduction of water. This conditioned reflex occurs according to the law which was previously determined to govern the reflex of the flow of saliva. It gradually weakens unless it is stimulated from time to time by the unconditioned reflex (the introduction of water), and it is inhibited by other unusual reflexes.

In the solution of the second problem the liver was selected as the "effector" organ, that is, the organ showing the effect (Ivanov). In a dog with a gall-bladder fistula, the flow of bile was considerably increased by the introduction of a 1% per cent solution of hydrochloric acid into the stomach. Later, the same result was obtained by the simulated introduction of hydrochloric acid. The effect was slighter but sufficiently pronounced to demonstrate an influence of the cerebral cortex on the secretion of bile by the liver. In experiments carried out by Rickl, a similar flow of bile was produced by the introduc-

tion of sodium taurocholate or glycocholate into the blood stream. The stimulant used to excite the conditioned reflexes was the preparation for the injections or a certain sound. In investigations of the spleen, the author, working with Gorshkov, made use of the subcutaneous displacement of the spleen. To produce an unconditioned reflex on the movements of the smooth musculature, a weak electrical stimulation of the lower extremities, just enough to cause pain, was used. If this was associated with a whistle the whistle alone was sufficient later to cause the movements of the spleen.

Gas metabolism was studied by Olinjanakaja. The basal metabolism was determined in a human subject. The man then performed muscular work for two minutes a metronome being set in action beside him. After from six to fifteen of such sittings the beats of the metronome without muscular work were sufficient to drive the basal metabolism up to 100 per cent. Other findings showed that the conditioned reflex caused increased oxidation in the tissues, especially in the muscle tissue. Therefore a trophic action of the nervous system was proved.

In attempting to solve the second problem, the author with Ivanov conducted the following experiments:

With careful exclusion of all "extrareceptive" stimulations, that is, stimulations perceptible to the sense organs, water was introduced through a gastric fistula into the stomach of a dog which had been subjected to gastrostomy. This caused a diuresis which could be measured as the urine was discharged from the ureters which had been made to open externally. A simulated introduction of water was then carried out, that is, the water introduced through the gastrostomy was withdrawn completely after a few minutes. In spite of this withdrawal diuresis occurred again and followed a curve similar in all respects to that observed when the water was allowed to remain in the stomach. Therefore the stimulation of the gastric mucous membrane had a conditioned reflex action on the renal secretion. The author terms such a stimulation "intrareceptive." He reports also experiments demonstrating the existence of "muscle receptors," "glandular receptors," and especially "organ receptors."

All organs are supplied not only with centrifugal fibers through which they receive stimulation to activity from the nerve centers, but also centripetal connections along which they inform these centers of the status of their work.

To the question whether every organ has its own localized, narrowly circumscribed centers in the brain or not, the author answers that there are no such centers. He believes that the cerebral cortex effects temporary connections between the various

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extracereptive and intracereptive impulses as they are needed and passes these impulses on to the sympathetically innervated organ for which they are intended

The study of the internal mechanism of conditioned reflex activity presented the greatest difficulties. With Alexjev and Berckmann the author was able to show that denervation of one kidney neither abolishes the previously set up conditioned reflexes nor prevents the formation of new reflexes of that type. The conclusion drawn that the centrifugal segment of the reflex arc is produced by the humoral route. It is thought that the brain stimulation transmitted (which one is not known) onto an endocrine gland of this gland acts specifically and that the product of this gland acts specifically on the kidney by way of the blood stream. The author discusses also recent experiments which suggest a chemical action in transmission of nervous process a chemical coordination or

the experiments and conclusions briefly reviewed by provide an explanation for many pathological therapeutic phenomena. In addition to the direct unconditioned reflexes which act on the various organs the action of the innumerable conditioned reflexes must always be borne in mind. Any form of treatment that is at all protracted is followed by the development of conditioned reflexes. This explains why in addition to the personality of the physician the influence of the personality of the patient is frequently of extraordinary importance in the outcome of a disease.

N. PERRAZ (Z)

Cahill H P The Modern Treatment of Brain Abscess *J Am Med Ass* 1934 cu 273

Cahill calls attention to the occurrence of aseptic venous sinus thrombosis extending to the torcular or even the cavernous sinus which may give rise to signs suggesting brain abscess. He cites two cases. He then briefly discusses the diagnosis of brain abscess and outlines the treatment. He prefers to trace the abscess along the pathway of infection from the otorhinological focus and when abnormal dura or a sinus tract through the dura is found to enter the abscess cavity at this point. He removes a cone of brain tissue and opens the abscess and an electrical knife and then empties the abscess and introduces a Mosher drain. Leo M Davidson M D

Laffitt H Intracranial Pneumatocoele (Pneumothorax) *Bull et mem Soc d* 1933 l 39

The case reported was that of a man twenty three years of age who attempted suicide by shooting. The pneumothorax was in the apical region. The patient died on November 2, 1932.

For ten days his course at home was uneventful but on December 27 he was returned to the hospital with paresis and exaggeration of the reflexes on the right side of the body. The spinal fluid was found to be under a manometric pressure (Claude) of 11 but was otherwise negative. X ray examination showed a large collection of air in the left frontal region occupying an area about the size of the palm of the hand. Under local anesthesia the cranium was opened and stylet passed into the pneumatocoele. The patient was discharged from the hospital February 15 in apparently good health and when seen again later was still normal.

Following a review of various theories as to the mechanism of pneumatocoele attention is called to the fact that in the author's case there was little in the clinical findings to suggest such a complication as there had been no loss of spinal fluid or bleeding from the nose or ears. Apparently the bullet had been deflected so that it opened the inner wall of the left frontal sinus and the tissue over the bony defect acted as a valve which permitted air to pass in but not out.

M. B. W. POOLZ M D

Craig W McK and Kernohan J W Cerebral Cyst *J Am Med Ass* 1934 cu 5

Cerebral cysts encountered at operation may be congenital inflammatory traumatic parasitic or neoplastic. To the neurosurgeon the most important and common group are those which occur with neoplasms. These have been found associated with practically all types of primary tumors of the brain above the tentorium. A much rarer type of cyst containing tumor in this situation is the meningioma of which only two have been seen by the authors. It was found that only the neoplastic cysts consistently contained clear fluid. All the other cysts contained clear fluid. It was noted further that in general the more benign the glioma the more prone it was to undergo cystic degeneration.

Decompression and simple drainage were often followed by a long period of palliation which allowed a later more radical procedure such as partial or complete removal of the tumor. Following internal drainage subsequent aspirations were sometimes necessary to prolong the palliation. Several operative procedures are sometimes necessary for the more benign tumor in order to remove them completely.

The authors report fourteen cases.

Roussy G and Oberling G A Contribution to the Study of Tumors of the Hypophysis (Contribution à l'étude des tumeurs hypophysaires) *P se méd P R* 1933 N 9 799

A detailed histological description is given of various types of tumor of the hypophysis. The majority of tumors of the hypophysis are adenomas. These neoplasms occur at all ages but are more frequent in young adults. The tumor of the hypophysis is a rare tumor of the brain.

cells with very little cytoplasm and no granulations, and chromophile cells with a highly developed cytoplasm and many granulations. The latter are divided into basophile and eosinophile cells. Accordingly, there are chromophobe and chromophile adenomata and various secondary and intermediate groups.

There are also two forms of chromophobe adenomata—those with an intensely vascularized trabecular structure and those with an alveolar structure made up of smaller cells with a lymphoid appearance resembling the principal cells of the normal hypophysis.

Three groups of mixed adenomata are recognized: those with cells resembling chromophile cells but with few or no acidophile granules, those with cells of the chromophobe type but containing distinctly acidophile granules at the periphery of the cytoplasmic body, and those with cells of a chromophobe type containing granules slightly stained by eosin.

There is also a group with fetal cells, found particularly in the lateral part of the anterior lobe. The fetal cells are cylindrical cells with a dark cytoplasm arranged in bands and representing vestiges of the embryonic hypophysis.

Still another group of tumors are those made up of pregnancy cells which resemble the hyperplastic cells of the hypophysis seen in pregnancy.

Secondary lesions are quite frequently found in cases of adenoma of the hypophysis. They may be so extensive as to obliterate the tumor structure. The most common are hemorrhagic foci, but there may be also foci of necrosis consisting of a pulpy mass containing crystals of fatty acids or cholesterol. One case of cystic degeneration has been reported.

It is generally believed that chromophile adenomata are the most frequent, but among the authors' forty-one cases there were thirty-two of chromophobe adenoma, twenty with clear cells, five with pregnancy cells, one of the fetal type, and one of an indeterminate type. There were two chromophile eosinophile adenomata, one basophile chromophile adenoma, and six adenomata of the intermediate or mixed type. It is possible that the predominance of the chromophobe form in surgical cases is due to the fact that this type of adenoma generally grows to a large size. Statistics showing a predominance of chromophile tumors were those of anatomists who found the tumors at autopsy, the tumors were generally small.

It is very difficult to differentiate between benign and malignant tumors of the hypophysis histologically. Some malignant tumors show a distinctly epitheliomatous structure with cubical or cylindrical cells not in the least resembling that of adenomata, but some do not show any histological evidences of malignancy, in analogy to other tumors of endocrine glands, the typical example of which is metastatic goiter.

The article contains photomicrographs of the different types of tumors, some of which are colored.

AUDREY GOSS MORCAN, M.D.

Kornblum, K. Deformation of the Sella Turcica in Tumors of the Middle Cranial Fossa. *Am J Roentgenol*, 1934, xxvi, 23.

The changes seen in the sella turcica in roentgenograms of the skull in cases of brain tumors are classified by the author according to the location of the tumor as follows: (1) intrasellar, (2) extrasellar, (a) suprasellar, (b) parasellar, (c) metasellar, and (3) sphenoidal bone. Kornblum discusses chiefly the changes in the sella produced by the parasellar tumors, those immediately adjacent to the sella in the middle fossa. These changes are found chiefly in the dorsum sellæ, which shows considerable erosion while the posterior clinoids, although sometimes indistinct, are preserved. In some cases the floor of the sella is eroded. Less frequently, the anterior clinoids are also affected.

LEO M. DAVIDOFF, M.D.

Stevenson, L., and Echlin, F. The Nature and Origin of Some Tumors of the Cerebellum. Medulloblastoma. *Arch Neurol & Psychiat*, 1934, xxvi, 93.

The authors describe six tumors confined to the cerebellum which they believe arose from the granular layers. They think that the term "neuroblastomata" is more suitable for such tumors than the term "medulloblastomata," but because of the origin of the neoplasms they suggest calling them "granuloblastomata."

The article contains illustrations showing the variation in position of the granular layer at different ages. The granular layer at first appears on the outer surface of the leaflets and later migrates inward to the position it occupies in adult life. The outer granular layer is composed of round undifferentiated cells without processes which later become elongated as they reach the final internal granular layer. Such undifferentiated cells associated with mitotic figures and rapidly changing both their shape and position might easily be supposed to give rise to tumors.

In the first case reported, sections showed tumor cells apparently growing from the outer surface of the leaflets and separating them. In other parts of the cerebellum there appeared to be remnants of an external granular layer. The second tumor showed a similar arrangement of tumor cells growing from the external surface of the leaflets and pushing them apart. The third tumor showed less stroma than the first two neoplasms and would ordinarily be considered a typical medulloblastoma. In several places it appeared to be growing from the outer surface of the cerebellar leaflets. At one place in the cerebellum the typical appearance of a vestigial external granular layer could be seen. The cells of the fourth tumor strongly resembled those of the granular layer of the cerebellum. The authors believe that this case was identical with the first two cases described, although no gross material was available for study. Microscopic examination of the fifth tumor showed the internal granular layer of the cerebellar leaflet to be continuous with the tumor.

tissue. The neoplasm looked like a continuation of this granular layer. In the sixth case the tumor grew from the outer edge of the cerebellar leaflets and there was an external granular layer similar to that found in normal newborn infants.

The authors emphasize that if medulloblasts occur in the nervous system there is no good reason why they should be confined to the cerebellum or to the roof of the fourth ventricle and produce tumors practically always in the cerebellum. Furthermore, the finding in medulloblastomata of a few cells which resemble either neuroblasts or spongioblasts is not sufficient evidence or which to base the theory that the cells of medulloblastomata are bipotential and capable of producing both neuroblasts and spongioblasts. However if the tumors described in this article are from a specific cerebellar structure, this would explain more readily why they are confined so largely to the cerebellum. Their supposed origin from the external granular layer of the cerebellum would explain the finding of cells resembling neuroblasts as this layer is predominately composed of neuroblasts. The differences seen in the normal development of the granular cells in man and the lower animals seems to warrant the assumption that the cells in the reported tumors may vary in size and staining properties and still be granule cells.

The color and tendency toward rosette formation is shared by the granular layer of the cerebellum as well as by medulloblastomata.

ROBERT ZOLLINGER M D

Carillo R Deviation of the Aqueduct of Sylvius and the Fourth Ventricle as a Sign of Tumor of the Posterior Fo. *Idiocranialography* (E) 1960 del des i con del a educt de 5 y 10 y 14 entríc lo los tumores de la fos. ran and posterior 3rd entriculografí ) 4 cá te i d ne l. 1961 12 2

In 1930 Carillo, after using Balade's method of roentgenographic ventriculography, first described the displacement of the aqueduct of Sylvius and the fourth ventricle in cases of cerebellar and cerebellopontine tumor. In his article he confirms the importance of ventriculography with opaque substances and reports five new cases (four of cerebellopontine tumor and one of tumor of the cerebellar hemisphere) which were controlled by autopsy. All of the patients were first seen in the stage of advanced intracranial hypertension. In the cases of three of them only a decompression was possible. The cerebellar tumor and one acoustic neurofibroma were partly removed. The deviation produced by the cerebellopontine tumors was limited almost exclusively to the aqueduct leaving the fourth ventricle in situ and in the majority of cases incompletely filled. The cerebellar tumor produced a displacement involving not only the aqueduct but also the fourth ventricle and the cisterna which were completely filled. Another differentiating feature in cases of cerebellar tumor is an lateral occlusion of the foramen of Luschka.

These signs have the same diagnostic importance in cases of infratentorial lesions of the posterior fossa as deviations of the third and lateral ventricles in cases of tumor of the cerebral hemispheres. If the tumor is large deviation of the aqueduct is accompanied by blocking of the fourth ventricle and the signs of median and lateral hydrocephalus co exist. If the tumor is smaller the ventricular system remains permeable and a large hydrocephalus may or may not exist.

The sign of deviation of the aqueduct is of great value in cases of tumor of the cerebellopontine angle with incomplete symptoms. These tumors are frequently mistaken for cerebellar tumors an error which may be confirmed by ventriculograms if they are made only with air. Iodoventriculography has proved that bilateral hydrocephalus without other findings hitherto considered almost pathognomonic of cerebellar tumors may be caused also by tumors of the third and fourth ventricles, cerebellopontine angle peduncles pons and medulla and by arachnoiditis. Moreover this method provides the medium for establishing the mechanism of bilateral hydrocephalus (ventriculography). The sign of deviation of the aqueduct and fourth ventricle show how the cause of a simple bilateral hydrocephalus as revealed by air can be demonstrated with exactness by Balade's iodoventriculography.

M E Morse MD

## SYMPATHETIC NERVES

Shaw R G The Sympathetic System and Pain Phenomena *Adv Sci* 1983; 72: 113-124 72

The author reports conclusions drawn from certain experimental and clinical observations regarding the afferent associations of the sympathetic system. The observations were correlated with the clinical results of sympathectomy for severe neurologic conditions in six cases. These cases are reported. Shaw summarizes his conclusions as follows:

The sympathetic fibers may conduct afferent stimuli subserving common sensation after the extirpation of the somatic innervation. This function appears to develop gradually after removal of the spinal nerve supply.

In certain types of intractable neuralgia sympathetic fibers convey impulses of pain which are distinct from the conditions of pain conveyed by the spinal system.

3. The sympathetic system acts as a control on the sensory thresholds and the removal of this influence is followed by a temporary increase of common sensitivity.

4. The anatomical sympathetic pathway to the cervicothoracic region contains spinosensory fibers the irritation of which might result in a comp site type of neuralgic pain.

5. Surgical ablation of the paraspinal ganglia will definitely alter the sympathetic type of unstable neuralgia through removal of the mechanism

of pain. Periarterial sympathectomy will certainly relieve pain in similar conditions, and it is suggested that the operation produces its results by the induction of an inhibitory phase through the radiation of molecular shock throughout the sympathetic neural circuit.

ROBERT ZOLLINGER, M D

Lewis, D., and Geschickter, C. F. Tumors of the Sympathetic Nervous System. Neuroblastoma, Paraganglioma, Ganglioneuroma. *Arch Surg*, 1934, LXXIII, 16.

The authors review tumors of the sympathetic nervous system, including 103 tumors studied in the Johns Hopkins Hospital, Baltimore.

Thirty-three of the 40 neuroblastomata reported occurred in the medulla of the suprarenal gland or the sympathetic ganglia adjacent to the medulla. About one-half of them developed in children under three years of age. The most common symptoms were fever, an abdominal mass, anæmia, and vomiting from pressure on abdominal viscera. The clinical picture of appendicitis was simulated in 5 cases. Multiple metastasis to bone occurred in 8. In the latter the clinical course was rapidly downward and in the majority death occurred within two months. Although these tumors may soften and decrease in size following roentgen-ray and radium therapy, irradiation seemed to hasten metastasis. The results of surgical therapy were unfavorable.

Fifty-two paragangliomata were studied by the authors. These are divided into 3 groups: (1) those arising from the carotid body, (2) those arising from the medulla of the suprarenal gland, and (3) the argentaffin or carcinoid tumors of the gastro-

intestinal tract. The authors have found the following factors of importance in the diagnosis of paraganglioma of the carotid body: (1) the position of the tumor at the bifurcation of the carotid artery, (2) long duration of the symptoms and slow growth, (3) an expansile pulsation, bruit, and thrill, suggestive of aneurism with absence of other changes in spite of long duration of the tumor, (4) oval shape and lateral mobility of the swelling, (5) a tendency of the growth to bulge into the pharynx without causing ulcerations of the mucous membrane, and (6) failure of the tumor to respond to irradiation.

Like the tumors of the carotid body, most of the paragangliomata of the suprarenal gland occurred in adult life. Hypertension, hypotension, and vasomotor instability were the most frequently noted clinical symptoms. Urinary symptoms may develop with deformity of the renal pelvis.

The argentaffin tumors of the gastro-intestinal tract occurred twice as frequently in the appendix as in the small intestine, but were rare in the stomach and large intestine. The majority were benign and ran a slow course. About 20 per cent of these tumors, especially those involving the small intestine, undergo malignant changes.

The authors add 8 cases of ganglioneuroma to the 103 cases previously reported. Although these tumors are usually benign and solitary, 3 of those in their cases were malignant. The symptoms are due to pressure and depend upon the location of the tumor. In 1 of the authors' cases a very small ganglioneuroma was found on the auditory nerve. Two of the malignant cases are reported in detail.

ROBERT ZOLLINGER, M D

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Mattina A A Contribution to the Etiology and Pathogenesis of Bleeding Nipple (Contributo allo studio etiopatogenico della mammella an-guinale) *Riforma med* 1933 xlix 1772

The author reports a rather unusual case of bleeding nipple in the male. The patient was a man forty five years old who eighteen months before his admission to the clinic noticed the gradual development of a small nodule in the right breast slight enlargement of the right nipple and the outflow of a few drops of a cloudy red fluid after pressure on the nodule. There was no spontaneous pain but the breast was somewhat tender on pressure. The left side was entirely normal. A few days later the mass became reddened painful and swollen. This condition persisted for three days at the end of which time a few drops of pus flowed from the nipple. Eight symptoms and masses then disappeared. Eight months later bleeding from the nipple occurred for a few days and thereafter recurred approximately every twelve to fifteen days.

Under local anesthesia the nipple region was resected. Microscopic examination revealed the presence of a subacute mastitis inflammation of the milk ducts and papilloma formation within the milk ducts.

Mattina reviews the literature on bleeding nipple briefly and discusses some of the theories regarding the pathogenesis and etiology of the condition. In the male bleeding from the nipple is most often associated with a malignant lesion of the breast but may be caused also by benign lesions. The phenomenon is a manifestation of many disturbances in the breast and does not constitute a clinical entity.

A Louis Rossi M.D.

## TRACHEA LUNGS AND PLEURA

Amberson J B Jr and Higgins H McL. Lipiodol in Bronchography Its Disadvantages Dangers and Uses *Am J Roent* 1933 xx 77

After bronchography retained lipiodol is gradually discharged through the bronchi. Direct absorption through the lung occurs only to a slight degree if at all. A slight exudative reaction usually occurs about deposits of lipiodol in the healthy lung but this seems not to be harmful clinically. The transudation of edema fluid may be considerable and may account for the rapidly developing roentgenographic lobar opacity reported by some roentgenologists.

Lipiodol may be retained in the pulmonary alveoli for days months or years. The persisting

density may impair the value of serial roentgenograms as guides for treatment.

Disadvantages and dangers peculiar to the cricothyroid and transtracheal method of injection on include the escape of oil into and its indelible retention to the cervical and mediastinal tissues the possibility of infection of these tissues by escaping bronchial discharges and pain dysphonia edema of the glottis dysphagia subcutaneous emphysema and air embolism.

Iodism is due chiefly to swallowing of the oil and the absorption of iodine through the intestine. As a rule this can be avoided by injecting the oil carefully in small amounts adopting measures to prevent retention in the lungs drainage of the bronchi after bronchography by posture and the administration of a brisk saline purge.

In cases of infectious disease mainly tuberculosis and acute or chronic suppurative conditions dissemination or aggravation may be caused by lipiodol injections. The authors record some instances of serious results and fatalities in such cases and discuss the reasons for such results. They cite also complications showing the danger of the intratracheal injection of iodized oil in cases with impairment of cardiac or respiratory function. In conclusion they describe the selection of cases for the injection of iodized oil and the technique that they have found most satisfactory.

E. A. O. LATIMER M.D.

Pisani S A Peculiar Mobile Area of Increased Resonance in Pneumothorax (Sopra un'area di risonanza mobile nel pneumot.) *Pol d'n Rm* 1933 l's prat 1926

In every case of pneumothorax there is an area of increased resonance due to the presence of gas in the pleural cavity. In cases in which the pleura is free from adhesions this area may shift about according to the laws of aerodynamics so that the air in the pleural cavity occupies the most elevated portion of the pleural cavity. The form of this area varies from case to case according to the local disease but with the patient in the horizontal supine position it is frequently bell shaped. The dimensions of the area of increased resonance are also extremely variable depending on the amount of gas present the distensibility and mobility of the lung tissue and the elastic tension of the lung tissue.

Most of these facts may be demonstrated by physical examination and are easily shown by X-ray examination. Recognition of the movable area of increased resonance is of importance in the diagnosis of early limited pneumothorax and in the determination of the course of pneumothorax therapy.

A Louis Rossi M.D.

# Marlin, H. P. The Importance of Bronchoscopy in Bronchiectasis. *Can. J. Med.*, 1934, VIII, 10.

I have a review of 200 cases of bronchiectasis. My conclusion is that the diagnosis of this condition is made best by bronchoscopy, as pointed out by Norris. As he tells me the injection of lipiodol. He states that bronchoscopy is also of therapeutic value. Bronchoscopy as a means of treatment has proved to be the most satisfactory method of treating cases in which empyema has developed about the bronchial dilations. In such cases there is a tendency to abscess formation because of the retained secretions. In bronchiectasis with persistent uncontrolled hemorrhage the bronchoscopic application of silver nitrate to the bleeding area has been successful.

Two types of postural drainage apparatus are described and shown in illustrations.

LEXINGTON, MASS. L. WILSON, M.D.

# Warner, W. P. and Graham, D. Lobar Atelectasis as a Cause of Irregular Roentgen Shadows in the Lung. *Arch. Surg.*, 1933, LXVI, 101.

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In thirty-two of the fifty cases of pleural calcification reported by the authors the deposits of calcium occurred after injuries (in fourteen a projectile was still present in the thorax) and were directly related to hemothorax. In twelve, they followed serofibrinous pleurisy, in two, empyema, and in three, therapeutic pneumothorax. In two, the cause was not determined.

In every instance the deposits were discovered by roentgen ray examination. Some of them were surprisingly extensive, covering nearly the entire pleural surface. They produced a dense shadow or appeared as scattered granules. Lateral roentgenograms may be necessary to determine the site of a deposit, and exploratory puncture may be required to distinguish it from pleurisy.

The various shadows produced by the calcium deposits are shown by sixteen roentgenograms, and the French literature on pleural calcification is reviewed.

MARSH W. POOLE, M.D.

# ESOPHAGUS AND MEDIASTINUM

## Collins, J. N. Lesions of the Esophagus. *Med. Clin. N. A.*, 1934, XXX, 1035.

Collins reports five cases of lesions of the esophagus. Each either emphasizes certain features in diagnosis or illustrates the rarer esophageal lesions.

Case 1 is that of a man sixty-five years old who complained of a continuous grinding pain in the region of the lower sternum and the upper epigastrium and had lost weight. The food test showed free acid and total acid was. Roentgen examination revealed a filling defect at the cardiac orifice suggestive of carcinoma. On month later roentgen examination in the Trendelenburg position revealed a hiatus hernia which reduced itself in all other positions. Excision of the stomach was done together with posterior gastro-ostomy for duodenal ulcer six months later. An obstruction developed in the middle of the esophagus and an extensive carcinoma was shown by X-ray examination.

Case 2 is that of a man aged sixty years who had difficulty in swallowing. Examination disclosed a dilated muscular stomach and the use of the acid in the stomach. Esophagoscopy and roentgen examination revealed no abnormalities. The condition improved when the stomach was treated.

Case 3 is that of a man forty years old who had a chronic productive cough and dysphagia and had lost weight. The sputum was purulent and foul. The patient was emaciated, and his temperature was about 100 degrees F. Roentgen examination revealed a large mass with cavity formation and partial obstruction of the esophagus in the region of the diaphragm. Displacement of the esophagus to the right suggested a traction diverticulum. The obstruction gradually became complete and gastrostomy was necessary. The author states that a traction diverticulum due to an adjacent inflammatory process is unusual.

Case 4 is that of a man aged fifty-four years who had lost weight and strength and had vomited frequently. Roentgen examination revealed a carcinoma of the stomach obstructing the lower end of the esophagus.

Case 5 is that of a man fifty-nine years old who complained of chronic cough, dysphagia, and hoarseness. Roentgen examination revealed a large globular diverticulum at the lower end of the esophagus on the left side. The author believes that this was a pulsion diverticulum of congenital origin.

J. DANIEL WILLIAMS, M.D.

## Jackson, C. and Jackson, C. I. Pulmonary Symptoms Due to Esophageal Disease. *Arch. Otolaryngol.*, 1933, LVIII, 731.

The authors point out nine ways by which pulmonary symptoms may be produced by pathological conditions in the esophagus and hypopharynx. These are the following:

1. Inspiration of infected food, blood, or oral, pharyngeal, or nasal secretions which overflow into



the larynx because they cannot pass through a  
enosed oesophagus

2 Direct extension up and over the laryngeal r m  
of pathological processes originating in the (es)  
phageal or hypopharyngeal wall

3 Direct extension through the oesophag  
tracheal wall or the wall of a bronchus usually the  
left main bronchus

4 Direct extension of the oesophageal disease to  
the pleura or through the pleura into the paren  
chyma of the lung

5 Direct extension of the oesophageal lesions to  
the mediastinum and thence to the lung

6 Extension of the oesophageal disease by way  
of the blood stream or lymph channels

7 Compressive stenosis of the trachea or bron  
chus without pathological involvement of the  
tracheobronchial wall by bulky oesophageal lesions

glandular metastases or foreign bodies lodged in  
the oesophagus

8 Laryngeal paralysis caused by pressure upon  
or involvement of the recurrent laryngeal nerve  
by a lesion such as a carcinoma

9 Reflex symptoms especially cough excited  
by disease limited to the oesophagus

In some cases the pulmonary symptoms pre  
dominate over the causative oesophageal symptoms  
to such an extent that the latter may be entirely  
disregarded by both the patient and the physi  
cian

The characteristic pulmonary symptom of oes  
ophageal disease is sudden waking with coughing  
choking and strangling. The patient believes that  
the source of the cough is altogether laryngotracheal  
and does not realize that the accumulated secretions  
have overflowed into the larynx. This overflow and  
this symptom may occur in health but they are  
much more marked when oesophageal drainage is  
impaired by stenosis

Puddling of the secretions in the pyriform sinus  
as seen in the laryngeal mirror is an important early  
sign of oesophageal stenosis with possibly impending  
pulmonary complications

In conclusion the authors state that in the search  
for an obscure cause of cough an examination of  
the oesophagus should be made with the roentgen ray  
and the oesophagoscope

EARL O LATIMER MD

Hindse Niel en S Peptic Ulcer of the Oesophagus  
(Ul u oph g d g e l n ) H sp Tid 933  
pp 40 4 4 457

Peptic ulcer of the oesophagus is usually an isolated  
lesion. It occurs in the lower third of the oesophagus  
It varies in size from that of a pea to a lesion measur  
ing from 3 to 10 cm and in olving the entire cir  
cumference of the oesophagus in a girdle like fashion  
Like ulcer of the stomach it occurs more frequently in  
ulcer of the stomach it occurs more frequently in  
men than in women. The author discusses its  
etiology and pathogenesis in detail

The most characteristic symptom is the pain  
This is usually localized in the upper part of the

epigastrium behind the sternum and may extend  
to the scapula Vomiting regurgitation and  
haematemesis are also very common. Because of  
the absence of typical symptoms the diagnosis and  
differential diagnosis may be difficult. Fluoroscopic  
examination discloses a niche a filling defect r  
stenoses of varying degree. The niche may be due t  
loss of tissue or folds of the mucous membrane  
Above the stenoses oesophageal dilatations may  
occasionally be observed. A definite diagnosis may  
be made by oesophagoscopy

In conservative treatment as in gastric ulcer  
the use of a liquid diet is to be considered. In add  
tion conservative treatment should include the  
administration of alkalies in powder or liquid form  
the administration of olive oil several times daily  
and painting of the ulcer with cocaine and a 5 to  
10 per cent solution of silver nitrate once or twice  
weekly through the oesophagoscope or the insuffla  
tion of bismuth subnitrate. Spasms require the  
administration of belladonna and sometimes the  
use of morphine. The author recommends also  
eumydrin and papaverin

As surgical treatment gastrostomy to exclude the  
ulcer comes up for consideration. The treatment of  
haemorrhage requires strict regulation of the diet  
bed rest and symptomatic measures. In perforation  
the treatment indicated depends on the site of the  
lesion. The operative treatment recommended for  
stenosis is the Rovsing procedure antethoracic  
anastomosis between the oesophagus and stomach  
by the formation of a skin tube along the first part  
of the sternum

The prognosis of peptic ulcer of the oesophagus  
must be considered grave. Of the seventy patients  
whose cases are reviewed by the author only  
seventeen are still alive. The chief danger is per  
foration which is usually fatal

Ingebrig ten R Esper m ntal In estigation on  
Suture of the Oesophagus After Resection (Ex  
p nm ntal U t s h ng n b d N ht d  
p me h n h R ku ) v k M g f  
Legende t 933 x i 48

The experiments reported were performed on cats  
In the first five animals resection of 1 cm of the  
thoracic oesophagus was followed by purulent  
pleurisy due to insufficiency of the sutures. Con  
tinuous sutures of catgut were made in the mucos  
a. The knots being placed in the muscular coat

After these unsuccessful experiments the author  
employed only the finest vaselined silk which was  
not infected by saliva or infectuous material from  
the lumen. Seven additional cats were used. In  
one 1 cm of the cervical portion and in six from  
1 to 5 cm of the thoracic portion of the oesopha  
gus were resected. In two of these cats a certa n  
time after the resection the oesophagus was sec  
tioned 2 cm above the diaphragm the abdominal  
peripheral portion anastomosed to the stomach  
S rral months after the operation the animals were

killed and the sites of resection subjected to microscopic study.

In no animal was there any postoperative infection. One cat, which was subjected to resection between the bifurcation and the caudal one hundred and twelve days before a second operation, an esophagostomy, died of purulent pleurisy ten days after the second operation. In this case the first operation impaired the circulation to such an extent that the occurrence of healing a second time in the immediate vicinity of the resection could not have been expected. The mucous membranes showed marked atrophic areas.

In all cases a continuous circular suture was made in the muscle. Microscopic examination showed that the silk sutures in the muscular coat were not absorbed, whereas those in the mucosa were eliminated.

The resection of 5 cm. of the esophagus of the cat, which is from 16 to 17 cm. long, is equivalent to the resection of 8 cm. of the human esophagus, which is about 25 cm. long. The author believes that with the technique described and a circular suture,

5 cm. of the human esophagus can be resected for benign carcinoma. ROBERTSON, (2)

Aguirre, R. G. and Araoz, J. I. Paroxysmal Inexpiratory Decubitus in Tuberculous Adenomediatinitis (*Taquipnea paroxística de decubito por afección mediastinitis tuberculosa*). *Acta Med.* 1933, 21, 1833.

The case reported is that of a girl nine years old. In the erect position there was no dyspnea and respiration was normal, but a few seconds after the patient assumed the horizontal position a sudden severe paroxysm of tachypnea developed and respiration reached the enormous rate of from 120 to 150 per minute. The horizontal position could be maintained for only a short time. When the erect position was again assumed the paroxysm ceased as suddenly as it began.

A diagnosis of tuberculous adenomediatinitis was made principally on the basis of the roentgen findings. The authors concluded that the horizontal position produced pressure on, and irritation of, the pneumogastric nerve. WILLIAM R. MILLER, M.D.

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Meleney F. Howes E. L. Colp R. Grace R. V.  
White W. C. and Heyd C. G. Disruption of  
Abdominal Wound Symposium 4 Surg  
934 xcix 5

Meleney and Howes review 55 cases of disruption of abdominal wounds with protrusion of the viscera which occurred in the Presbyterian Hospital in New York in a period of eight years. The incidence of this complication in all cases of abdominal operation was about 1 per cent. Fifty of the cases were carefully analyzed. Disruption occurred most commonly in patients over forty years of age and was twice as common in males as in females. Only 14 of the 50 patients were under forty years of age. Fourteen of the cases were under forty years of age, four were infected. The disruptive force was an undue activity in 14, vomiting in 38, cough in 29, distention in 38, and hiccup in 18. The disruption occurred in an upper vertical incision in 33 cases, a middle vertical oblique incision in 7, a vertical incision in 4, an upper transverse incision in 2, and an upper transverse incision in 2. Drains were used in 19 cases. The wounds were closed by continuous sutures of plain catgut in 4 cases, continuous plain and chromic catgut in 3 cases, continuous sutures of chromic catgut in 12 cases, a continuous suture of chromic catgut in 1 case, a continuous suture of silk in 1 case, circular buttons or tubes in 4, and lateral sutures with buttons or tubes in 17 cases. The operations followed by wound disruption most frequently were cholecystectomy and gastroenterostomy. The mortality was 44 per cent. The greatest number of disruptions occurred between the seventh and the tenth day after the operation.

Disruption of the wound is due to too rapid absorption of the sutures approximating the wound edges before healing of the wound has occurred. If absorbable sutures are used, absorption of the suture is favored by exudation into the wound and the presence of micro-organisms. The tensile strength of sutures and the holding power of the tissues diminish progressively. The process of repair does not begin immediately. There is always a lag period which varies in length according to the patient's condition. Under ideal conditions fibroblasts begin to appear and lay down their fibrils after forty-eight hours. Healing begins rapidly but slows down at the end of a week or ten days. In clean cases it is usually complete after fourteen days.

Meleney and Howes believe that silk is better suture material than catgut in clean cases. Its use

is associated with less exudation and is less likely to be infected and there is little or no diminution in its tensile strength. Silk should not be used in infected or contaminated cases. The length of time that catgut sutures will resist digestion is difficult to determine. Retention sutures are apt not to hold the peritoneum and have a tendency to cut the abdominal wall. For maintenance of approximation of the peritoneum and posterior sheath, Meleney and Howes recommend a continuous or interrupted suture of the mattress type reinforced by an interrupted or continuous over-and-over suture of fine chromic catgut. They believe that a continuous suture alone is particularly poor. The tensile strength of No. 0 chromic catgut is greater than the holding power of any tissue likely to be sutured with it. Larger sizes cause more exudation and more rapid absorption. In cases in which a transverse incision is made, wound disruption is less frequent, probably because there is less danger that omental tags will get between the suture lines and there is less tension on the suture.

Colp reports a study of 26 cases of wound rupture among 2,750 consecutive laparotomies performed at the Mt. Sinai Hospital, New York, and 3 cases from private practice. The incidence of rupture was 1.12 per cent in males and 0.75 per cent in females. It was highest in the fourth and fifth decades of life. The underlying lesions on response to the disruption were a malignant tumor in 28 per cent of the cases, was a gynecological condition such as fibroid in 19 per cent, acute appendicitis in 19 per cent, and some other condition such as sepsis or fever of undetermined origin in 11 per cent. In 316 cases of carcinoma the incidence of wound disruption was 2.2 per cent. Colp believes that careful pre-operative care of cachectic patients may decrease the incidence of wound disruption.

Midline incisions are most apt to rupture of a midline epigastric incision. In the cases reviewed is attributed by Colp to the use of a special technique for the closure of the stomach. This consisted of the introduction of a single layer of interrupted through and through sutures of heavy braided silk which were left in place until the fourteenth day. The most frequently used incisions were those made parallel with the linea alba through the upper muscle. The most common approach to the upper abdomen was vertical splitting of the upper part of the rectus muscle. The incidence of wound rupture in this type of incision was 2.2 per cent.

# SURGERY OF THE ABDOMEN

the lower rectus muscle-splitting incisions it was 54 per cent. Of 20 cases in which a para-umbilical rectus muscle-splitting incision was made, disruption occurred in 2.

In the closure of the abdominal incisions the peritoneum was closed with a continuous suture of chromic catgut, the fascia, by interrupted sutures of chromic catgut, and the skin, by a continuous suture of silk, an interrupted suture of silk or silk-worm gut, or by pincettes.

Disruption occurred between the second and the eleventh days after the operation. It seemed to be most frequent on the seventh day, and to occur usually after removal of the skin sutures. While Colp doubts that the removal of the disruption, he had a causal relationship to the disruption, he believes it advisable to leave the skin sutures undisturbed for a longer period of time in the cases of patients with cachexia, weakness, anæmia, distention, or meteorism.

In cases in which wound closure is impossible because of infection, it is probably better to leave the entire wound open rather than merely the skin. Colp packs the wound and leaves it undisturbed for ten to twelve days. When the pack is removed the granulations are usually so healthy that the wound edges can be approximated with adhesive tape. Healing almost invariably follows. This procedure was used in 23 cases without any untoward results. Abdominal binders are probably of value in preventing evisceration.

In cases with drainage the incidence of wound rupture was 12 per cent, and in cases without drainage it was 84 per cent.

Wound rupture should be suspected when the dressing which has previously been dry suddenly becomes stained with a bloody serous discharge.

The treatment preferred by Colp consists of packing the wound or secondary suture of all layers with drainage. The tampon method is the procedure of choice in infected cases. Healing requires an average of thirty-seven days. In 19 cases in which the tampon method was used the mortality was 32 per cent. Of 11 patients traced, 7 subsequently developed a hernia. Secondary suture is indicated in clean cases with evisceration but without peritonitis. Of 10 patients treated by this method, 8 recovered and 2 died. The secondary suture was performed with interrupted through-and-through heavy silk sutures over a drainage pack. In the 8 cases in which recovery resulted there were no untoward complications. The period of hospitalization averaged forty-six days.

The cause of death as determined by 5 post-mortem examinations from the gall-bladder bed cases and hæmorrhage from the stomach in 1 case. The mortality in the series was about 28 per cent.

GRACE reports an analysis of 46 cases of abdominal wound disruption from the First Surgical Division of Bellevue Hospital, New York. Protrusion of the viscera occurred in 36. The type of incision

used was as follows: upper split right rectus, 28 cases, upper split left rectus, 8 cases, median epigastric, 3 cases; lower split rectus, 3 cases, reversed Kammerer, 2 cases, transverse, 1 case and median suprapubic, 1 case. Thirty-nine of the 46 disruptions occurred in upper abdominal incisions. In all cases a continuous suture of chromic catgut was used. Silk or silk-worm gut was employed only for skin apposition. No retention sutures were used.

The operation was performed for carcinoma in 8 cases, chronic ulcer of the stomach or duodenum in 10 cases, gall-bladder disease and appendicitis in 7 cases each, stab-wounds of the abdomen and perforated ulcer of the stomach or duodenum in 3 cases each, chronic intestinal obstruction in 2 cases, and ruptured typhoid ulcer, ruptured spleen, gunshot wound of the abdomen, abscess of the liver, tuberculosis of the peritoneum, and an undiagnosed condition in 1 case each. The postoperative complications actively favoring the disruption were infection and coughing in 17 cases each, vomiting in 9 cases, distention or obstruction and hiccough in 4 cases each, retching at lavage and difficulty in the suturing in 2 cases each, and the patient's getting out of bed and an unknown cause in 3 cases each. The largest number of the disruptions occurred on the seventh day. Twenty-seven occurred between the seventh and tenth days inclusive.

The sudden discharge of sanguineous fluid from the wound is indicative of wound rupture. The next sign of importance is pain. In 30 of the cases reviewed the disruption was treated by secondary suture and in 16 by strapping or packing or both. Secondary suture consisted of through-and-through silk-worm-gut or silk sutures. Strapping with or without packing was used most often in the cases in which the disruption occurred slowly and when it was discovered, the extruded contents were already adherent to the deeper wound tissues, also in severely infected wounds. In only 2 of the cases requiring secondary suture did the wound fail to heal. Both of these were controlled by strapping. Of the 28 patients who recovered from the complication the majority developed a postoperative hernia. In the 36 cases with protrusion of the viscera there were 15 deaths, a mortality of 41 per cent, and in the 10 cases without protrusion of the viscera there were 3 deaths, a mortality of 30 per cent. The total mortality was 39 per cent. In 28 cases treated by secondary suture there were 11 deaths, and in 18 cases treated by strapping and packing there were 7 deaths.

WHITE reports on 30 cases of disruption of abdominal wounds in the Roosevelt Hospital, New York, in which there was a mortality of 53 per cent. Thirteen of the 30 patients were over fifty-five years of age, and 5 were suffering from malignant disease. A median incision was made in 2 cases, muscle retraction was done in 6, and the fibers of the rectus muscle were split in 22. The split rectus incision was made in more than 75 per cent of the cases. Cough was an important fac-

for in 6 cases and distention in 3. Infection was present in 8. A discharge of bloody fluid from the wound is indicative of rupture. The amount discharged may be quite considerable. The rupture usually occurs insidiously. In the closure both of fresh wounds and through sutures have proved most satisfactory. White warns against placing too much reliance on catgut. If there is placed through the entire abdominal wall. Separation of the edges is most apt to occur between the eighth and tenth days. The predisposing factors are senility, decrepitude, malignancy, jaundice and a peculiar body tissue function that dissolves catgut earlier than usual.

Hezo reports that of 245 laparotomies performed by him rupture of the wound occurred in 4 or in 2 of 536 with 1 death. Of 1000 laparotomies performed at the Postgraduate Hospital New York in 1931 disruption occurred in 4 or 1 in 250 with 1 death a mortality of 25 per cent.

Three types of wounds may result in disruption. The first is the wound in which healing apparently occurs normally but rupture occurs following removal of the sutures. The second is the wound in which a portion of the small intestine works its way through a gap in the peritoneal suture line. In cases of such wounds vomiting and abdominal distention are more marked than usual. The wound ruptures following removal of the sutures. The third type of wound in which disruption is apt to occur is the wound which shows evidence of inadequate healing. The skin edges are everted, edema is present and the wound is especially apt to occur in cases of nephritis, diabetes, carcinoma and jaundice. In the majority of the cases reviewed non absorbable retention sutures were used and were not removed until between the tenth and fourteenth days.

Heyd believes that the incidence of wound disruption can probably be decreased by (1) complete hemostasis in all abdominal wounds (2) relaxation of the abdominal wall during the closure of abdominal wounds (3) the avoidance of undue trauma (4) the elimination of dead space (5) an absolutely aseptic technique and (6) accurate coaptation of peritoneum.

ALTON DICKNER, M.D.

## GASTRO INTESTINAL TRACT

Riess A B Clinical Consideration of the Etiology of Peptic Ulcer. *Amer J Med* 934 hu 97

An attempt has been made to apply some of the hypotheses advanced to explain the causation of peptic ulcer to the clinical problems of ulcer in man. In all probability peptic ulcer is the result of several interacting and variable factors. Physiologists have demonstrated that the aggressive action of undiluted juice can produce ulcer by its eroding potentialities. It produces ulcer the more effectively when it comes into contact with tissues unaccustomed and not

protected by nature to receive it. The author suggests that this factor of aggression may be more likely to cause ulceration when the resistance of the tissues exposed is in some way lowered by trauma. This is an infective intestinal wall or mucosa injured by mechanical or chemical irritants might succumb and disintegrate when a membrane with a normal protecting mechanism would remain intact. Systemic factors, if conducive to the diminution of resistance of tissues or capable of producing prolonged or persistent accentuation of the aggression factor of the acid chyme might increase the liability to the development of ulcer and recurrence in such cases. There seems no doubt that the factors involved in the formation of ulcer vary in different persons at different times. Consequently every patient presents problems requiring careful study. Such a study should reveal the particular factor or combination of factors which will obtain in each case and correction of these factors should be expected to result satisfactorily when applied in the treatment of ulcer.

The author reports a series of ten cases.

Abel A L Acetylcholine in Paralytic Ileus. *La* 933 cck v 347

The author states that in fifty cases of normal convalescence from a laparotomy he used acetylcholine routinely in the postoperative treatment starting with 0.1 mgm. thirty six hours after the operation and repeating this dose every six hours until flatus or feces were passed without an enema. This result is obtained in many entirely untreated cases in from six to twelve hours.

In numerous cases of general peritonitis in which he used acetylcholine a course was more favorable than it would have been without such treatment. However he believes that acetylcholine must be used in many more cases before it can be recommended for the postoperative treatment of every case in which laparotomy is done.

In several cases in which there was doubt as to whether the condition was due to mechanical or paralytic obstruction Abel gave 0.1 gm of acetylcholine hourly for six doses. By this treatment operation was frequently avoided. In cases of organic obstruction no untoward effects were produced. Most patients with severe postoperative distention gas pains and paresis of the bowels are considerably benefited by the administration of acetylcholine by intramuscular injection. In paralytic ileus acetylcholine appears to be almost specific in effecting a cure.

ARTHUR L. SMITH, M.D.

Martinotti G The Pathogenesis and Clinical roentgenological Symptomatology of Dolichocolon (Sull'importanza della sintassi gastrica nel colon ad elongazione). *Riv di med* 1933 12

This article is based on a careful study of a number of cases of dolichocolon which the author ob-

served personally. The term "dolichocolon" means an increase in the length of the colon. This condition is most often confused with megacolon. Further complicating its recognition is the difficulty in establishing the limits between normal variations and beginning dolichocolon. The author outlines a technique for roentgenological examination which he considers necessary to establish the diagnosis definitely.

Total dolichocolon is rare. As a rule the lengthening occurs only in segments of the colon. Many variations occur, but the most common is the so-called segmentary dolichocolon in which only one segment is lengthened and the remainder of the colon is of normal length. In compensatory segmentary dolichocolon there is an increase in the length of one loop, but the adjoining loops are smaller than normal so that the total length of the colon is normal. In a certain number of cases there is an associated megacolon, in other words, a megadolichocolon. The author believes that when the two conditions co-exist the dolichocolon was primary. The mechanism of dilatation depends principally on stenosis of position (kinking) and segmentary reflex atonia. To make the diagnosis of dolichocolon in such cases the pre-existence of the lengthening must be definitely proved. The various types of dolichocolon encountered and the distinctive roentgenological findings in each type are described in great detail.

The etiological theories are discussed. To the anatomical or congenital and the physiopathological theories the author adds the theory of mixed causes, a combination of the two. According to the latter, an anatomical anomaly is the basis on which a pathological process acts to lead eventually to an accentuation or increase of the congenital malformation. True dolichocolon is congenital. The condition has been demonstrated in infants.

The author discusses the symptoms in detail. In the true congenital type of case there are few if any symptoms unless complications develop. In the type of case in which the physiopathological element predominates there may be many varied and vague symptoms. In any event there is no clear-cut clinical picture, and as a rule the symptoms are those occurring in any other colonic condition. In many cases dolichocolon is discovered accidentally in the course of X-ray examination.

In conclusion the author states that while he believes dolichocolon is of congenital origin, the increase in the length of the colon may be further increased by functional abnormalities due to mechanical or nervous factors.

T. BANFORD JONES, M.D.

Patterson, D. C. Appendices Epiploicæ and Their Surgical Significance, with a Report of Three Cases. *New England J. Med.*, 1933, CCX, 1255.

Bland-Sutton describes appendices epiploicæ as localized, pedunculated overgrowths of subserous fat directly continuous with the fat in the mesentery.

They may have a protective function similar to that of the omentum, but their chief function is unknown. They may be affected by (1) inflammatory changes, (2) torsion of the pedicle, (3) calcification and the formation of loose bodies, and (4) incarceration in a hernial sac with or without torsion. The diagnosis of these conditions is possible only at operation. The symptoms may simulate those of almost any abdominal disease, but are especially apt to suggest diverticulitis. In some of the cases in which the diseased appendage was on the sigmoid, appendicitis was suspected.

The author thinks that disease of the appendices epiploicæ is more frequent than is generally believed, and that the possibility of its presence should always be borne in mind. He is of the opinion that it may be responsible for some of the abdominal disturbances in which recovery occurs without operation or diagnosis. It should be considered when exploration of the abdomen fails to reveal any of the diseases usually responsible for acute abdominal symptoms.

Of the three cases reported by Patterson, one was a case of acute inflammation, one of torsion of the pedicle found during hysterectomy, and one of incarceration in the sac of a femoral hernia.

CLARENCE C. REED, M.D.

Gundel, M., and Mayer, F. Statistics and Frequency of Appendicitis (Ueber die Statistik und Häufigkeit der Appendicitis). *Ergebn. d. Chir.*, 1933, LXVI, 490.

Appendicitis is steadily increasing in frequency in all countries. Reports in the literature differ as to the incidence of the condition in males and females. The mortality is inversely proportional to the incidence of the disease in the various age groups. Appendicitis is most frequent between the ages of eleven and thirty years. The mortality is highest among infants, a fact explained, in part, by the difficulties of diagnosis. Chronic appendicitis occurs more frequently in women than in men. Acute appendicitis during pregnancy is very dangerous, its mortality ranging from 30 to 40 per cent in contrast to the general mortality of from 5 to 10 per cent. Women of the child-bearing age who have had one attack should be urgently advised to have an interval operation before pregnancy occurs.

According to Prinzing's statistics, the mortality is highest in the higher social groups. It varies greatly in different countries. In spite of improvement in the education of physicians, operative technique, and transportation facilities, the absolute mortality has increased everywhere. In Spain and Italy the mortality is lower than in Sweden and Scotland. Switzerland has the highest mortality. In all countries and at all ages the mortality of males is greater than the mortality of females.

The authors discuss appendicitis in Germany in more detail. As compared with the prewar period, there has been a 3-fold increase in the morbidity of the condition. During the war the morbidity was sharply decreased in all countries. In spite of an

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increase in the absolute mortality the relative mor-  
tality has fallen. In 1923 the mortality was 2.31  
per cent and in 1929 1.58 per cent. In Germany  
the morbidity is higher in females than in males. The  
mortality is higher in males than in females. The  
morbidity and mortality vary in the different prov-  
inces and states. The morbidity is highest in Ba-  
varia but even there it is considerably lower than in  
Scotland and Sweden. Fatalities are more frequent  
in cities than in rural districts. However most of the  
conclusions may be drawn from the fact as most of the  
patients from rural districts are operated upon in  
city hospitals. While the relative figures for age  
groups show that the absolute figures which are  
based on the greatest incidence of the disease show  
that it is highest between the ages of twenty and thirty  
years. In Germany the cost of appendicitis to the  
state and society is now estimated at 30,000,000  
marks annually and is increasing.

The article contains numerous tables

Faanz (Z)

The article contains numerous tables

De Gregorio E. Contributions on Twenty One Cases of Rectal Stenosis - The Ano rectal Syph form of Fournier (An r t nes tob e 21 cas d exteno s r t t floime n t d Madrid 1933 n 3 764 F urn e) Prog dela d

In all of the twenty one cases reported by the author there was a history of the passage of mucus and blood at some time previous to the development of the stenosis. De Gregorio says that this may be an indication of the beginning of the disease. With regard to four patients with a positive Frei test who had mild constipation hyperplasia of the rectal folds and hardened mucosal folds without stenosis he says that later observations will be of interest to determine whether stenosis develops or not. In one of the cases reviewed the stenosis developed after a pelvic abscess which drained through the rectum but there was no adenopathy. In another case rectitis and an annular stenosis developed after the formation of an abscess in the intestine 2 cm above the anus and its drainage through the rectum. One case of rectal stenosis was that of a woman whose husband had been treated for typical lymphogranulomatosa 2 years previously.

The anus and rectum were treated by type cauterization. The husband had been treated for typhoid fever. All of the cases reviewed were those of female prostitutes who were prostitutes. There was a general evidence of venereal disease. All had a positive reaction to Frei's test and Leishman-Neelsen stain. These results were contrary to those obtained by most other investigators who have found the test positive and the Ito-Reinert stain negative.

The anal sphincter muscle of Fournier is characterized by thickening of the walls of the rectum and the sphincter muscle with loss of elasticity and flexibility of the lower intestine wall but without reduction of the lumen or the presence of ulceration or scars. When the disease is usually found as the symptom some degree of stenosis is usually found as the symptom.

FACT OF SURGERY

Three types of stenosis are described: (1) the valvular (2) the annular and (3) the cylindrical or tubular. Mixed types are frequent. The rectal mucosa may show strawberry vegetations which bleed easily. It may be congested and red grayish or whitish. Fistulous tracts in the perianal region are common. The factors that have been held responsible for the disease are syphilis, chancroid infection, tuberculosis, and trauma.

Among the factors that have been held responsible for the condition are syphilis, chancroid infections (Ducrey bacillus), gonorrhea, tuberculosis, mycoses, lymphogranulomatosis, ungual and traumatic.

There is much clinical experimental biological and anatomical evidence indicating that the condition has its origin in lymphogranulomatosis. The author summarises this as follows: Rectitis and stenosis of the sigmoid colon developed following a sexual relation with a patient suffering from lymphogranulomatosis.

There is much evidence... anatomical evidence... has its origin in lymphogranuloma... author summarizes this as follows:  
Clinical evidence Rectitis and stenosis of the sigmoid colon are associated with sexual relations.  
Histological evidence Lymphogranuloma is characterized by the presence of lymphogranulomatous nodules.

[illegible]

Biological evidence. Freis reaction is specific. The intravenous injection of antigen is followed by a febrile reaction. In cases of lymphogranuloma tonsus pus obtained from fistule of persons with rectal stenosis causes a positive intradermal reaction.

in hyperplastic condylomata of the anal folds and in subcutaneous lymphogranulomatosis of the anal area. The author believes that the cause will be determined by determining whether the rectal and anal lesions are the same pathological process.

Anatomical evidence of the anogenital lymphogranulomatosis is a milar in hyperplastic condylomata of the inguinal lymphogranulomatosis are a milar. The author believes that the cau e will be discovered only by determining whether the rectal and perirectal gland lesions are the same pathologically. The lymphatic infection of the lymphogranulomatosis is of great importance in the production of the syndrome. The primary infection of the lymph glands usually those of Gerota accounts for the location of the stenosis at the level of these glands. By retrograde lymphatic drainage from these glands the infection extends to the submucosa and mucosa of the rectum causing stenosis. The origin of the infection may be genital anal or rectal. When it is genital inguinal adenitis occurs and this infection extends to the anal and perianal regions. When the origin is anal or rectal the anal and perirectal lymph glands may be involved. In some cases an anogenital syndrome with stenosis will develop and in the second syndrome stenosis remains in the rectal lymphatics.

The author is of the opinion that in many cases the agent may be the agent responsible

The author is of the opinion that in many cases the etiological agent may be the agent responsible

for lymphogranulomatosis inguinale, but that syphilis and chancroid infections may also play a part  
W H MARTINEZ, M D

Ladd, W E, and Gross, R E Congenital Malformation of the Anus and Rectum *Am J Surg*, 1934, LVIII, 167

This report is based on a careful study of 162 cases of anal and rectal abnormalities

Following a discussion of the embryology of the anorectal region the authors present their own classification of anorectal anomalies which is based on clinical studies and is of value in determining the form of treatment and the prognosis (1) stenosis of the anus, (2) membranous obstruction of the anus, (3) imperforate anus, but with separation of the rectum from the anus, and (4) anus and anal canal normal, but with separation of the rectum from the anal pouch The external anal sphincter is present in all 4 types In 52 per cent of the cases reviewed fistulae of various types were present

The symptoms and physical signs in these cases are essentially those of complete or partial intestinal obstruction In the reviewed cases of imperforate anus and rectal atresia there was complete obstruction whereas in the cases of anal stenosis and those with fistulae the evidence of intestinal obstruction was less marked In all cases careful examination of the anus and rectum yielded sufficient information for diagnosis and classification of the case X-ray examination with the infant in the inverted position was a valuable aid in determining the distal extent of the rectal pouch in cases of imperforate anus and rectal atresia In the first fifteen or twenty hours of life even this method is not entirely reliable as some time is required for gas to reach the lower intestinal tract

The treatment varied with the type of case, but the essential feature, of course, was the establishment of continuity of epithelium between the rectum and skin to prevent scar formation with constriction The external sphincter was always used to provide adequate control In the cases of stenosis repeated dilatation was usually sufficient When the canal could not be dilated, it was excised and the rectal mucosa was brought down In cases of membranous imperforate anus a cruciate incision followed by dilatations was sufficient The cases of Groups 3 and 4 presented the greatest problems The majority of these were operated upon by the perineal approach The rectum in such cases was brought down through the external sphincter and the mucosa sutured to the skin When the rectal pouch was not long enough to permit this, colostomy was performed However the perineal operation was possible in the majority of the cases—86 per cent of those of Group 3 and 66 per cent of those of Group 4 When fistulae were present it was found to be expedient to vary treatment according to the location of the fistulae The lower ones (rectoperineal, rectofossa navicularis, and rectovaginal) were relatively easy to close when the rectal abnormality

was corrected during the first few days of life The higher ones (recto-urethral and rectovesical) were difficult to reach through a perineal incision Consequently it was found best to delay treatment of these until the patient attained the age of eight or nine years

In the total number of cases there were 43 deaths Twelve were directly attributable to associated congenital abnormalities This leaves a mortality rate of approximately 19 per cent for the anorectal abnormalities and their complications As might be expected, the mortality was lowest (9.5 per cent) in the cases of Group 1 and highest (61.6 per cent) in those of Group 4  
T BANFORD JONES, M D

## LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Schiassi, B Calculosis of the Gall Bladder (*La calculose de la vésicule biliaire*) *J de chir*, 1934, LVIII, 8

Since cholecystectomy was first performed by Langenbeck in 1882, it has become a standard operation which is carried out in thousands of cases of cholelithiasis yearly However, regardless of its popularity, experience has gradually demonstrated that it is currently undertaken with much more optimism than is justified by its results According to one authority, complications occur in 50 per cent of the cases in which it is done

For many years the author has been reluctant to remove the gall bladder, and since 1900 he has been an active opponent of cholecystectomy as a routine measure Whenever possible he has limited operation for cholelithiasis to evacuation of the gall bladder followed by complete closure, believing that the gall-bladder possesses important functions and therefore should be conserved

When the sphincter of Oddi opposes the flow of bile into the duodenum the gall bladder acts passively as a reservoir While the bile remains in the gall bladder, the gall bladder concentrates it 5 times by removing part of its water content By active contraction (the claims of Winklesstein notwithstanding) the gall bladder empties its contents into the duodenum at the moment when the chyme is most abundant

Following cholecystectomy the sphincter of Oddi loses its tonicity and the flow of bile into the duodenum becomes continuous or the tonus of the sphincter is retained and the common duct and the hepatic ducts with their first branches become dilated and assume the function of the gall bladder

The pathological changes following cholecystectomy include progressive destruction of the epithelium and fibrosis of the walls of the larger bile ducts, conditions favoring infection of the biliary tract, an increase in intestinal putrefaction and in the virulence of the intestinal flora, reduction of pancreatic secretion by at least two-thirds (Iverson), and interference with the digestion of fat These are the intrinsic effects of the operation Possible



# INTERNATIONAL ABSTRACT OF SURGERY

4 4

extrinsic effects include pancreatitis pericholecystitis adhesions periduoenteritis and pericoliculitis with adhesion stenosis and biliary fistula Because of the frequency of these complications Rosenthal said Never promise a patient about to undergo cholecystectomy that he will not suffer after the operation The mortality from peritonitis hemorrhage shock and hepatic degeneration after the operation is not inconsiderable The hepatic changes are especially important

Schiassi performs cholecystectomy only when the walls of the gall bladder are altered to such a degree that the function of the organ as a contractile reservoir is seriously limited He states that in cases in which the gall bladder wall is only moderately thickened the mucosa is only slightly ulcerated and the serosa is smooth and the mucosa is free is sufficient When the serosa is smooth the other tunics are little thickened and the mucosa is free from ulcerations cholecystectomy is the operation of choice This consists in liberation of the gall bladder and evacuation of the calculi followed by complete closure It was first performed by Loret of Bologna in 1875 The author shows the technique by illustrations He and his colleagues have obtained satisfactory results from cholecystectomy in 324 cases

ALBERT F DE GAO + M D

Laumers E The Surgical Treatment of Cancer of the Ampulla of Vater (Trat m churgical du cancer atel n) J de ch r 1933 xiv 533

Of the cancers of the small intestine those of the duodenum are the most common They usually occupy the ampulla of Vater and may arise from the ampulla itself the duodenal mucosa the duct of Wirsung or the head of the pancreas

Depending upon the origin of the tumor the first result of cancer of the pancreatic secretion usually is flow of bile or the pancreatic secretion usually is however the initial symptom is not usually icterus is continuous and becomes progressively more intense When there is complete biliary obstruction the feces are clay colored and intermittently pigmented When there is a complicating biliary infection epigastric pain and fever occur Eventually hepatic degeneration and toxic nephritis develop and the patient dies with oliguria vomiting and deepening coma

Physical examination reveals no tumor The liver is large and unless cholelithiasis complicates the picture the gall bladder is dilated

Cholecystography shows only the absence of the gall bladder shadow Roentgen examination of the gastro intestinal tract may reveal hyperperistalsis in the duodenum and occasionally a small defect in the inner border of the shadow of the second part of the duodenum

Analysis of the duodenal contents and of the feces for blood is usually negative In the differential diagnosis stone in the common duct chronic pancreatitis and carcinoma of the pan

creas must be ruled out In cases of stone in the common duct pain precedes the icterus and the icterus is intermittent In chronic pancreatitis and carcinoma of the pancreas there is a palpable tumor

The treatment of cancer of the ampulla may be palliative or radical Palliative operation consists of internal or external drainage The results of both types of drainage are poor According to Gosset the mortality of internal drainage is 75 per cent and that of external drainage 70 per cent The radical operation consists of removal of the tumor This was first performed by Halstead in 1893 The patient died seven months later from recurrence In 1900 Mayo reported the case of a patient who survived the operation two years At the present time about sixty four cases are on record In fifty seven the operation was done in one stage In fifty one the operation was removed by the transduodenal route in two by the retroduodenal route and in two through the common duct In two instances a segment of the duodenum was resected Among the seven two stage operations cholecystectomy was performed twice Drainage of the common duct twice cholecysto-enterostomy three times excision of the tumor by resection of a segment of the duodenum twice

The value of the radical operation depends upon the variety of the tumor Tumors originating in the terminal portion of the common duct in the duct of Wirsung or in the duodenal mucosa possess the degree of malignancy common to cancers of the intestine and metastasize to the regional lymph nodes True tumors of the ampulla remain strictly localized for long periods

The difficulties of a radical operation are much less formidable than is generally supposed Whether the operation is performed in one or two stages the first step should be diversion of the flow of bile External drainage is to be condemned For internal drainage a choice may be made between cholecysto-gastrostomy cholecystoenterostomy and cholecysto-gastrostomy Cholecystoenterostomy is undesirable because the gastric juice eventually damages the common duct to the duodenum When this is done gall bladder mucosa Most surgeons anastomose the common duct to the duodenum When this is done by Colley's method there is no reflux of the duodenal contents When the gall bladder is dilated an anastomosis with the jejunum is preferable A long loop of jejunum or the Y anastomosis of Montprofit should be used The latter eliminates the danger of angiocholus

Depending upon the patient's general condition the second stage of the operation removal of the tumor may be performed immediately or delayed for two weeks The internal exploration to establish the presence of the tumor must be direct through an incision on the duodenum The tumor is often no larger than a pea and may be overlooked if only palpation of the duodenum is done As the tumor is often friable or mobile sounding of the common duct may also lead to error The duodenum should be

mobilized and then opened by an incision along the right border. The tumor has the appearance of a small cauliflower growth or an ulcer. When it is a cauliflower growth it has arisen in the ampulla and is sharply outlined. When it suggests an ulcer it is a malignant intestinal cancer and the surrounding mucosa is indurated. To excise the ampulla a circular incision should be made. Usually this need be no deeper than the submucosa. If the muscularis is included, the pancreatic duct must be re-implanted in the duodenum and the common duct ligated at its origin.

Resection of the duodenum with or without the head of the pancreas is a difficult and shocking operation. Moreover, for cancer of the ampulla it is more extensive than necessary, and for cancer extending beyond the limits of the ampulla it falls short of a rational operation for malignancy. Coffey has systematized the technique, but the procedure has been attempted only five times.

Radium therapy has apparently been employed only rarely. In one case, Abell (1924) fixed the radium in close contact with the tumor through a

duodenal incision and for removal attached it to a heavy thread previously introduced by mouth. Handley (unpublished case) introduced needles into the neoplastic mass by the retroperitoneal route and brought the threads to which they were attached out of the abdomen through a large drain. Because of the marked œdema produced by the radium and the menace of complete duodenal obstruction, a preliminary gastro-enterostomy is essential.

The author gives the histories of two personal cases. Both patients were operated upon in one stage. Internal drainage of the bile was established by a Y cholecystojejunostomy. A generous loop of the upper end of the jejunum was sectioned and the lower end passed through the transverse mesocolon and implanted in the gall bladder. The upper end was anastomosed to the side of the lower segment of the loop, end to side. In both cases the tumor was small and could be excised by an incision of the mucosa and submucosa alone. When seen respectively nine and forty-six months after the operation, the patients were in good health.

ALBERT F. DE GROAT, M.D.

# GYNECOLOGY

## UTERUS

Pfahler G E and Vaseline J H Irradiation in the Treatment of Fibromyoma of the Uterus  
Am J Roentgenol 1934 22 57

The authors believe that irradiation is the treatment of choice for (1) all cases of fibromyoma in women near or past the menopause in which tumor extends no farther than midway between the symphysis and umbilicus is not undergoing degeneration and is not causing intolerable pressure symptoms (2) all cases of fibromyoma in women with marked organic heart disease diabetes nephritis pulmonary tuberculosis or other constitutional conditions which would contra-indicate surgical removal and (3) all cases of large fibroids in which immediate operation is contra-indicated by anemia

It is contra-indicated by (1) malignancy of the uterus or adnexa (2) tumor masses extending farther than midway to the umbilicus unless operation is refused or there is a definite contra-indication to operation (in which case irradiation is justified for a fibromyoma of any size) (3) pedunculated or submucous tumors (the results in the treatment of such tumors are less favorable as the bleedng often continues after the irradiation) (4) large fibromyomata which are producing distressing pressure symptoms and yield to irradiation too slowly and (5) fibromyomata which have undergone cystic degeneration or are gangrenous

In the cases of young women with the desire for and the possibility of pregnancy myomectomy is the treatment of choice. If operation is refused or if myomectomy is impossible treatment by irradiation is justified. Care must be taken to protect the ovaries

The advantages of roentgen therapy are summarized as follows

1. Roentgen rays are almost universally available
2. They are more useful than radium as they produce a more direct and homogeneous effect on the tumor as well as on the ovaries
3. Roentgen therapy can usually be applied without seriously interfering with the patient's occupation
4. It is less expensive as hospital costs are avoided
5. The effect is produced more gradually than by operation or radium irradiation
6. It eliminates nervous shock as well as any objection to intra-uterine applications
7. It produces no caustic action on the endometrium

The authors use 200 kv 4 ma a filter of 0.5 mm of copper and a distance of 50 cm. In cases of small fibroids they employ three portals one anterior and one through each sacrospinous notch the central rays

being directed through the uterus. If the tumor is very large more portals must be employed and great care must be taken to prevent fat necrosis from crossing the subcutaneous tissue. As a rule the authors give 50 per cent doses serially through each of the three fields until 100 per cent is given through each field. In cases of large tumors twice this amount is necessary. Because of the danger of fat necrosis fibrosis telangiectasis and cross fire effects on the subcutaneous tissue near the surface the authors avoid giving more than a total of 250 per cent through any abdominal field

With regard to radium therapy the authors state that as a patient may have both a fibroid and a carcinoma of the body of the uterus they perform a curettage and curettage before introducing radium. If the pathologist's report shows malignancy the radium is left in place for a longer period of time. In cases of small fibroids a single application of radium is usually sufficient. A polypropylene of radium is associated with this angle procedure. Radium treated successfully by this angle procedure which usually causes cessation of the hemorrhage

The authors use their own applicator which is curved like a uterine sound and will accommodate two or three 50-mg capsules. The radium is screened with a 2 mm of platinum and 0.5 mm of hard rubber or aluminum and is left in place for from twenty four to forty eight hours depending upon the condition present. The vagina is well packed both to keep the applicator in place and to displace the bladder and rectum. In cases of large fibroids and cases of malignant disease the authors used both radium and deep roentgen therapy

ALBERT M. VOLLMER M.D

## ADNEXAL AND PERIUTERINE CONDITIONS

Rubovits W H and Kobak A J Failure in Tubal Sterilization (Madlener) Am J Obst & Gynec 1934 22 2

Two cases in which the Madlener tubal sterilization was followed by pregnancy were studied by serial sections. Each case represented a different manner of restoration of the function of the tubes. One tube appeared to have recovered its patency by an endosalpinx whereby an approximation of the tubes shunted the loop of crushing and ligation. The other tube recovered its function because the ligature cut through one loop and encircled the other portion with little constriction

In two cases X-ray examination showed the tube passing through the port on the abdominal cavity upon which a free spill into the results of the Madlener operation must be checked by lapidol usually



granulosa epithelium and demonstrate that women in the child bearing age become normal after extirpation of the tumor

Like others the author has found granulosa carcinoma highly radiosensitive. Partially extirpated tumors have been treated successfully by  $\frac{1}{2}$  ray irradiation

Many previous reports concerning the radio sensitivity of malignant ovarian tumors are worth less because of their lack of histological data. All reports of cures of ovarian tumors by irradiation should include a detailed description of the histological findings

HANS O. NEUMANN (G)

### MISCELLANEOUS

Grigorie A A F Morosoff A N and Serduloff M G The Influence of Opaque and Caustic Substances on the Organs and Tissues of the Lesser Pelvis. An Experimental Study (Sur l'influence des substances opaques et caustiques sur les organes et tissus du petit bassin). Et de exp m m tale J G l t b s t 193 xxvii 6

Hysterosalpingography is employed to determine (1) the condition of the uterine cavity (2) the relations between the cervix and body of the uterus (3) the relief of the mucosa and its condition (4) the presence of submucous tumors and polyps in the uterine cavity (5) the topography configuration and size of the uterine cavity in cases of tumor of different types (6) the presence or absence of pregnancy elements in incomplete abortion (7) the presence of extra uterine pregnancy (8) the presence of uterine genital parts in certain teratological cases (9) the presence of obstruction and constriction of the fallopian tubes and (10) the depth and topography of the artificial vagina formed by the operations of Baldwin and Min

The various opaque substances used differ in their irritating effect on the tissues of the genital organs. Those most commonly employed are lipodol iodipin engrol orghochron collargol and sodium bromide. In order to study the effect of these substances on the tissues more carefully the authors carried out a series of three to five experiments on dogs injecting the various substances into the uterus and tubes under pressure with uterine pressure and normal condition. The technique and results of the experiments are reported in detail and the following conclusions are drawn

1 The clearest roentgenogram is obtained with the use of lipodol and barium emulsion

2 According to control roentgenograms lipodol persists in the normal uterus for nearly two weeks. Its presence after two weeks indicates an imperfect uterus and a pathologico-anatomical process

3 In the pregnant uterus the opaque masses distribute themselves in a peculiar manner between the coverings of the fetus and the uterine walls forming spots of different sizes

4 Roentgenography does not always show the quantity of residual opaque substance which is present in the walls of the uterus and can be demon

strated only by histological examination. This may be explained in part by defective roentgenographic technique and in part by the distribution of opaque substances in process of dissolution which cannot be shown in the film

5 In the different experiments with lipodol the effects on the tubal uterine wall were quite different. After insufflation under pressure the incidence of changes was 5 per cent and the atrophic changes were marked. After insufflation without pressure the incidence of changes was 40 per cent and atrophy was less pronounced or wholly absent

6 Lipodol is resorbed in two weeks in the normal uterus but persists longer than two weeks in non developed uteri or in inflammatory or degenerative conditions of the latter

7 Satisfactory results were obtained with barium emulsion without any change in the uterus

8 Leucorrhoea after the injection of iodine is transitory

9 The resorption of the opaque substances occurs by continual penetration of the latter into the wall of the uterus to the peritoneal layers

10 The changes in the ovaries manifested by diminished function were noted only when iodine was used and this manifested by marked hyperemia of the ovaries and the whole peritoneum when nitrate of silver was used

11 In all of the experiments with lipodol and barium no change was observed in the ovaries the peritoneum or other tissues of the smaller pelvis

12 When the indications and contraindications are carefully considered and a correct technique is used hysterosalpingography is free from danger

EMMA JACOB DE MOORE

Mazer C. and Katz B R. Clinical Evaluation of Combined Prolan and Anterior Pituitary Therapy. Endoc. 1933 xxv 709

Mazer and Katz studied the effect of prolan and extract of the anterior lobe of the pituitary gland when used individually and combined. By prolan they mean the anterior pituitary like substance obtained from the urine of pregnant women. In the reports in the literature and in his own experience Mazer found that only 10 per cent of amenorrhoeic women respond to prolan alone. However prolan has a favorable effect on functional uterine bleeding due to pituitary deficiency. The explanation is that amenorrhoea and oligomenorrhoea are due to more severe pituitary deficiency than functional bleeding and require more stimulation than prolan can produce. That there is a variability of species response and that in the human being prolan cannot stimulate primordial follicle development though it has a marked luteinizing effect

The work of other investigators has indicated a biological dissimilarity between prolan and the hormone of the anterior lobe of the pituitary gland

Prolan was found to stimulate the prehormone of the anterior lobe of the pituitary gland into an active ex hormone

The authors confirmed the findings of Evans in rats and of Leonard in rabbits that the combination of extract of the anterior lobe of the pituitary gland and prolactin causes a much greater ovarian response than either of the two products employed individually. There appeared to be an unknown principle in the pituitary extracts which, when employed individually, produced no gonadotropic or growth effects, but when used in combination with prolactin produced ovarian stimulation far greater than that produced by prolactin alone.

Fifty patients with amenorrhoea or oligomenorrhoea were given three weekly injections of 4 c cm of pituitary extract and from 30 to 40 rat units of prolactin. The number of injections varied from twenty to sixty. Only nineteen of the entire group of fifty responded to the injections by six or more menstrual flows at regular intervals and of fair quantity. A few menstruated while under treatment, but did not continue to menstruate after the treatment was stopped. Only one of the nine women suffering from hypomenorrhoea responded to the treatment.

The best results were obtained in cases of definite pituitary deficiency. Thirteen of the twenty-four women classified in this group responded favorably to the treatment, while only one of thirteen women suffering from primary ovarian failure was benefited. The authors describe the characteristics of the patients with pituitary or ovarian deficiency.

Primary dysmenorrhoea was not influenced by the injections of pituitary extracts and prolactin.

A. F. LASIE, M.D.

Sommer, S. The Serum Diagnosis of Gonorrhoea in the Female (Zur Frage der Serodiagnose der weiblichen Gonorrhoe). *Zeitschr. f. Geburtsh. u. Gynäk.*, 1933, Cvi, 185.

In a study of the practical value of the complement-fixation reaction in gonorrhoea the author examined 303 sera. "Comphgon" and a preparation of the Department of Public Health of Prague were employed as antigens. These 2 preparations proved to be equally reliable.

Of 106 cases of chronic gonorrhoeal adnexitis, the causal organism could be demonstrated bacteriologically in only 27 per cent, whereas the serological examination was positive in 95 per cent. A strongly positive and a positive reaction constitute strong presumptive evidence of the presence of gonorrhoea, but a weakly positive and slightly positive reaction must be interpreted in conjunction with the clinical findings and are indications for further study of the case.

In acute gonorrhoea a positive reaction is very rarely observed before the fourteenth day. Therefore the significance of the test is much less in superficial processes limited to the mucous membrane than in chronic adnexitis.

In metastatic lesions of gonorrhoea, a positive reaction may be expected in practically all cases. The reaction is positive also in the cases of patients who

have previously received injections of gonococcus vaccine.

As a rule the reaction continues to be positive for from two to five months after clinical cure.

With regard to the specificity of the reaction in cases of serum positive lies, the author believes that only luetic who had a gonorrhoeal infection previously have a frankly positive complement-fixation reaction for the gonococcus.

In conclusion, Sommer advises routine serological tests for the gonococcus in cases of gynecological inflammation.

WALDI FR (G)

Vidaković, S. The Gonococcus Complement Reaction in Gynecological Inflammatory Diseases (Go Komplementreaktion bei den gynäkologischen entzündlichen Erkrankungen). *Liječ. vjesnik*, 1933, Iv, 105.

Up to the present time the gonococcus complement reaction has seldom been employed in gynecology although it may be of value in the differential diagnosis in many instances of pelvic inflammatory diseases. A differential diagnosis between puerperal septic, tuberculous, luetic, and gonorrhoeal infections on the basis of the history, clinical findings, and pelvic examination is often very difficult. In chronic gonorrhoea, microscopic examination of the cervical and urethral discharge is usually negative, whereas the gonococcus complement reaction is positive. Siebert-Schultze and Bruehl obtained a positive gonococcus complement reaction in 75 per cent of their cases, while Bucura, using his method of withdrawing and testing blood from the portio and the venous circulation, made a correct diagnosis in from 90 to 100 per cent of his cases.

In the author's chronic cases the blood taken from the portio gave a somewhat stronger reaction than the venous blood. In some cases the reaction of portio blood was positive when that of the venous blood was negative. In no instance was the reaction of the venous blood stronger than that of the portio blood. The test for syphilis was made at the same time. In four of seventy-five cases the complement reaction was positive, a finding of great importance in the treatment. In one group of cases in which, although gonorrhoea was strongly suggested both clinically and by the findings of palpation, the gonococcus complement reaction was constantly negative and the condition resisted all forms of conservative treatment, operation revealed tuberculous salpingitis. It is emphasized that the gonococcus complement reaction was negative in many cases with clinical findings suggesting gonorrhoea. In such cases further investigations are necessary.

(G)

Léo, G. Observations on Parasitism in Gynecology (Notes sur le parasitisme en gynécologie). *Revue française de gynéc. et d'obst.*, 1933, xxviii, 834.

Three common gynecological diseases caused mainly by parasites are described. The author first reports ten cases of dysmenorrhoea due to helmin-

de eloped a very severe form of gonococcal polyarthritis which terminated fatally. The portal of entry could not be ascertained. As the mother did not have an evident gonococcal septicemia, a portal of entry other than the vagina was considered. In an infant 11 days old, Kitch Jokitich, the urethral secretions of the mother showed gonococci. Besides pyemias with clinically evident septic foci such as arthritis, pregnant women may suffer from transitory bacteremias that pass unperceived and yet are capable of infecting the fetus.

Loh believes that the gonococci from the vagina may penetrate the fetal membranes by the amniotic fluid by way of the fetal membranes. Besides the early arthritis of infants, a late gonococcal arthritis may become manifest at the end of about three months. In 1906 Holt observed quite an epidemic of gonococcal arthritis (twenty-four cases) in a children's hospital. Although no gonococci could be demonstrated in the mouth he, as of the opinion that the infection occurred by way of the buccal mucosa. In 1927 Cooperman reported an epidemic of gonococcal arthritis and suggested that the infection may have occurred by way of the rectal mucosa.

Smilya believes that the organisms enter the body by way of the conjunctiva and pass through it with out causing ophthalmia. Bientano is of the opinion that gonococcal septicemia is sometimes due to a primary postnatal mucosal infection.

These authors have observed six cases of gonorrheal rheumatism in pregnant women during the last months of pregnancy. Three of the women had children with symptoms of polyarthritis. In two of the cases the child had no ophthalmia as a portal of localization. In the third case the occurrence of very severe septicemic symptoms during the first days of life simultaneously with the development of the ophthalmia led the authors to conclude that the polyarthritis was related to the ophthalmia. Three cases of polyarthritis are reported in detail. In the first case the mother developed a gonorrheal arthritis four days before delivery and the condition progressed in spite of a month of treatment. The infant born at term was congenitally weak (hypothermia, sclerodema and loss of weight) but had no ophthalmia. Twenty days after birth it developed polyarthritis and on the twenty-fifth day after birth it died. Gonococci were found in the pus from the articulations.

In the second case the mother developed gonorrheal arthritis two weeks before delivery. The infection developed without fever. On the tenth day after birth the infant developed polyarthritis without septic localities and without serious involvement of the general health. There was no ophthalmia.

In the third case the mother developed febrile gonorrheal polyarthritic rheumatism during the

last month of pregnancy and the condition continued until delivery. On the third day of life the infant developed gonorrheal ophthalmia, a fever and severe general involvement. A few days later the gonococcal polyarthritis developed on the fourth day and began to improve on the fifth day.

From these cases it appears that there is a relation between the infection developing in the mother and the infection developing in the child. After birth there was a period of pure pyemias septicemia without metastatic localization which lasted eight to ten and twenty days in the three cases respectively. In Case 2 in which the infection in the mother and child was benign this period remained latent. In the two other cases it was characterized by fever and loss of weight. This latent period is followed by a stage of multiple metastases (arthritis abscesses) during which the general condition becomes more grave. One of the infants developed a choleraform syndrome ending in death. A new articular attack does not supersede the febrile subsides and the general condition improves.

EDITH SCARFORD MERRILL

**Boschetti M. X Ray Diagnosis of Intra Uterine Death of the Fetus (Sulla diagnosi radiologica della morte intra uterina del feto).** *Rivista di Ginecologia e Ostetricia* 1933, 27, 447.

The author's experience in the diagnosis of intra uterine death by means of the Spalding sign is largely satisfactory. He mentions that Kehler and others are also convinced that this sign is not reliable.

Three cases with numerous roentgenograms are presented for the purpose of evaluating the changes occurring after fetal death. The following changes were noted: (1) deformity of the fetal skull (2) fetal attitudes and (3) rigidity and torsion of the spinal column.

Deformity of the fetal skull especially dislocation or subluxation of the cranial bones at their respective articulations was found to be the most reliable sign. The author attaches considerable importance to this abnormality whenever it appears in the roentgenogram but states that its absence does not prove the fetus to be still alive. GROSSE C. FIVOLA, M.D.

**Dieckmann W. J. and Wegner C. R. The Blood in Normal Pregnancy. I. Blood and Plasma Volumes.** *Arch. Int. Med.* 1934, 103, 71.

Previous reports on the blood and plasma volumes in pregnancy are at variance with each other and are inconclusive because of the difference in the methods used and the calculation. The volumes are reported in cubic centimeters per kilogram or in percentage of body weight either of which is not reliable because of the constant change in the weight in pregnancy.

The authors made determinations of the blood and plasma volumes in various groups of women at different periods of pregnancy. The number of cells





# INTERNATIONAL ABSTRACT OF SURGERY

Some of these cases were under observation for a number of years. Most of the women showed characteristic symptoms of intestinal parasitism. Some of them had nervous symptoms such as headache, giddiness, insomnia, and picking at the nose. The others complained of the author because of gastrointestinal symptoms, especially foul eructations, salivary abdominal discomfort, irregular movements of the bowels, and intense itching about the anus. Some of them had a pale or sallow skin and sunken eyes. The parasites found were the blastocystis hominis and in another rare form of intestinal trichomonas the lamblia was discovered in the stools. The severe dysmenorrhea was either relieved or cured by the administration of antelmintics and cathartics.

The author next discusses infestation with trichomonas. He cites Riff who claims that the trichomonas vaginalis is incapable of injuring normal vaginal epithelium, but in the presence of even microscopic lesions of the vaginal mucosa it causes the trichomonas vaginitis which is characterized by a profuse watery, yellowish and frothy discharge.

This discharge produces multiple erosions and sometimes even papillomatous growths of the vaginal wall.

The trichomonas also causes persistent pruritus vulvae. Cotte claims that nine of ten cases of vulvar pruritus are due to it. The parasite may even invade the cavity of the uterus.

Schmid and Kamolker found that pregnant women harboring the trichomonas in the vagina have a high postpartum morbidity. Therefore it is advisable to examine the vagina for trichomonas before every confinement and every gynecological operation. The best treatment is the application of a 50 or 100 per cent solution of silver nitrate twice weekly.

For all persistent cases of vulvovaginitis in children the author advocates the use of a vermifuge because this infestation is often aggravated by a subinfestation with oxyuris vermicularis. He cites two cases of severe vulvovaginitis with gastrointestinal and nervous manifestations in girls six and three years of age. In these cases a vermifuge not only cleared up the discharge but also relieved the general symptoms.

ISAAC ANDREWS, M.D.

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Jonas, A. F. Jr. An Evaluation of Signs and Symptoms in the Diagnosis of Extra-uterine Pregnancy. A Review of Ninety Cases. *Am. J. Obst. & Gynec.* 1925, 14: 1-4

Ectopic pregnancy occurs slightly more often on the right than on the left.

The most constant and important symptom is pain. In the typical case, irregular colicky pain in the lower abdomen occurring in a paroxysmal manner every two weeks or a mild sense of distress or discomfort is followed by severe pain like a kick, or a beam, or a stab in character like the pain of labor.

Rational the pain is infrequent.

Although most textbooks state that hemorrhage is a feature of the condition, bleeding occurred at some time in 60 per cent of the cases reported. The blood was usually fresh and occurred daily there were gushes of bright red blood. The bleeding often resembled the normal menstruation.

Vomiting distinct from that of morning sickness occurred in about one fifth of the cases. Tenderness in the hypogastric region, rigidity and palpable masses were present in the majority.

In the acute cases, the onset of the acute pain was usually marked by recurrence or an increase of the existing pain. The pain was often exacerbating and there was marked tenderness. Examination seldom revealed a palpable mass, but diastolic pulsations frequently smitten dullness. Signs of acute blood loss such as air hunger, a rapid pulse, sweating, and apprehension were limited to this group of cases. The white blood cell count was considerably elevated, varying from 10,000 to 37,000 and increasing. There was usually a slight rise in the temperature.

Fikentscher, R. Investigations of the Porphyrin Content of Human Amniotic Fluid. *Ueber den Gehalt an Porphyrin im menschlichen Fruchtwasser*. *Arch. f. Gyn.* 1925, 11: 1-29

The increased occurrence of porphyrin during fetal life and its relationship to the growing organism, the presence of coproporphyrin in the meconium and the affinity of uroporphyrin for developing bone have attracted the attention of obstetricians. Since porphyrin can be demonstrated in the amniotic fluid of animals, the question arises whether it is present also in human amniotic fluid and, if so, in what concentration and at what periods of gestation.

For making quantitative determinations the author has developed a special method based upon

the measurement of the fluorescence. The determination of the porphyrin (Strophilometer) is of importance because of the low concentration of the porphyrins of the method and its sources. The porphyrins of the method and its sources are discussed, and a description of the technique is given. (One) and (two) are made and (three) are the determinations are made.

A porphyrin pigment could be demonstrated in human amniotic fluid. It is a porphyrin compound, as indicated by the fluorescence. At the beginning of embryonic development it could not be detected in the end of gestation, it could be detected in the majority of cases. The total concentration was found approximately at the middle of gestation. Comparison of the absolute content in relation to the amount of amniotic fluid showed that the total amount also undergoes relative decrease during the last months of pregnancy. The studies appear to show that porphyrin does not have its origin in the fetal urine. Its source, fate, and role are not yet explained.

Slobozianu, H., and Herscovici, P. Placental Transmission of Gonococcal Infection to the Fetus. *La transmission de l'infection gonococcique du placenta au fœtus*. *Bull. Soc. Med. Paris* 1925, 121: 1-10

In the literature on the problem of fetal infections no mention is to be found of placental transmission of gonococcal infection. However, there are reports of cases which demonstrate congenital transmission of this infection and afford an explanation of a series of disorders that could otherwise remain unexplained.

In 1911 Leclercq reported the case of an infant ten days old who suffered from gonococcal arthritis with gonococci in the synovial fluid. The child had no ophthalmia nor any other mucosal localization of the infection. The mother had gonococci in the lochia.

In 1924, Finkelstein, during the works of Noor-Lund and Vassell, admitted that in rare instances, a gonococcal pyemia might be transmitted to the infant during intra-uterine life.

In 1925, Fischer reported a case of gonococcal arthritis without an evident portal of entry and admitted a placental transmission.

Knauer, in 1925, reported a case of gonorrheal rheumatism in an infant seven days old without ophthalmia or vulvovaginitis. He concluded that in this case the bacteria had passed through the skin.

Hellmann, in 1925, reported the case of a boy born by caesarean section who, four weeks after birth,



centimeters per kilogram and the means for the different periods were calculated. Although there is a slight increase at term, statistical analysis indicates that the changes are of no significance.

The findings of similar studies in which the same women were followed throughout pregnancy and the puerperium are summarized as follows:

1. The blood and plasma volumes begin to increase in the first trimester. By the thirteenth week the gain amounts to 16 and 18 per cent, respectively.

2. At term, the average increase in the blood volume is 23 per cent and the average increase in the plasma, 25 per cent. This change is designated as an "oligocythemic hypervolemia." Although the increase seems large, losses of 700 cc. or more of blood are at once manifested in measurable reductions in volume. The pregnant woman survives losses of blood which would be fatal to the non-pregnant organ, partly because of the increase in blood volume, but more particularly because of the tremendous amount of liquid in her tissues.

3. Eight weeks after delivery there is an average decrease of 16 per cent in both the blood and the plasma volume. This does not quite equal the increase, but as most of the women weigh more after pregnancy, the discrepancy is explained.

4. The increase in the blood and plasma volume is not merely to fill vessels, but probably a part of the mechanism required to permit proper fetal respiration.

CARL H. DAVIS, M.D.

Browne, F. J.: *The Early Signs of Pre-Eclampsic Toxaemia, with Special Reference to the Order of Their Appearance and Their Interrelation*. *J. Obst. & Gynec. Ped.* 11, 2, 1932, 21, 1160.

Browne reports a study of 120 toxic patients observed in the course of a year in the clinic and antenatal ward of the University College Hospital, London. Hypertension (130/70 or over) was the earliest sign in 75 per cent of these cases and the sole evidence of toxemia in 56 per cent. Edema was the earliest sign in 43 per cent and albuminuria the earliest sign in 3 per cent of the cases. Hence, while hypertension is the earliest sign in the majority of cases, it does not necessarily precede the other manifestations and the evidence does not prove that it is the cause of either edema or albuminuria. A blood pressure rise early in pregnancy followed by a more or less prolonged interval of normal readings is considered by Browne a warning of future permanent hypertension.

HENRY S. AUST, JR., M.D.

## LABOR AND ITS COMPLICATIONS

Ssolowjew, W.: *Manual Removal of the Placenta* (Weber die manuelle Placentaloesung). *Veratsschr. f. Geburtsh. u. Gynakol.*, 1933, 100, 34.

A comparison of present day statistics with old statistics shows that the mortality after manual removal of the placenta has fallen from between 10 and 14 per cent to between 1.5 and 2 per cent. The

morbidity, however, is still high, from 20 to 30 per cent. The decrease in the mortality is doubtless due to the fact that in former times manual removal of the placenta, because of its danger, was performed almost exclusively in the cases of exsanguinated and moribund women. Moreover, in the computation of the mortality neither the condition of the patient nor the associated operation with its own mortality rate were taken sufficiently into account.

The author has collected statistics from Russian clinics concerning the frequency of manual removal of the placenta during the period from 1883 to 1918 and from 1919 up to the present time. In the first period the placenta was removed manually in 2,012 (6.95 per cent) of 304,192 deliveries, and in the second period in 2,527 (1.4 per cent) of 179,717 deliveries. The majority of Russian obstetricians ascribe the frequent practice of manual removal of the placenta to the frequency of abortion in the United States, of Soviet Russia (damage of the uterine musculature, destruction of the uterine glands, infection of the uterine cavity). In the author's opinion, an equally important cause is the increasingly active management of the third stage of labor.

In a series of tables arranged according to different points of view, the author presents his own statistics on manual removal of the placenta performed in 150 (2 per cent) of 7,170 deliveries occurring during the years from 1906 to 1931. He found that the factors which increased the incidence of manual removal of the placenta included (1) previous abortions, (2) increased age of the women, (3) the number of antecedent pregnancies, (4) operative delivery (manual removal of the placenta was done in 23.4 per cent of the operative deliveries and 6.6 per cent of the spontaneous deliveries in the home), and (5) premature delivery. While manual removal of the placenta appeared to be indicated in 2.35 per cent of the entire number of cases, it was required in the cases of 10 (6.6 per cent) of the elderly primiparae, 14 (6.4 per cent) of the cases of twin pregnancy, and 9 (6 per cent) of the cases of placenta previa. The postoperative course was normal in 71 cases (18.5 per cent). It was much better in uncomplicated cases in which delivery occurred spontaneously at the clinic than in cases of operative delivery at the clinic, and was poorest in cases in which delivery occurred at the patient's home. The gross mortality was 5.5 per cent (8 deaths), and the net mortality 2 per cent (3 deaths). The author deducted 1 case each of typhus, croupous pneumonia, and sepsis in which the disease was present at the time of the woman's admission to the clinic and constituted the indication for the manual removal of the placenta. He deducted also the cases of 2 women who came to the clinic in a state of complete exsanguination and died respectively twenty and seventy minutes after manual removal of the placenta. Of the remaining 3 patients, 1 died of embolism and 2 of sepsis.

Manual removal of the placenta is a dangerous operation. Therefore the indications must be estab-

ished carefully. The primary indication is hemorrhage. In the absence of hemorrhage in cases of retention of the placenta the period of expectancy should be prolonged. *Diets (6)*

#### PUERPERIUM AND ITS COMPLICATIONS

Bohdanowicz Z. and Jankowski T. Anaerobic Bacteria in the Blood in Puerperal Infections. *Ana. ob. kr. me. im. Blut b. pu. pueralen infek. tio en. G. et. polsk. 1933 XI 454*

The authors made a bacteriological study of the blood according to the method of Boez in ninety-one cases of puerperal sepsis. In seven cases—in three of which the condition followed delivery and in four of which it followed abortion—the perfringens (Welch Fraenkel) bacillus was found. In one case the bacillus sporogenes was found in addition. Bacteriological studies for anaerobic bacilli in these cases revealed the staphylococcus albus and the

streptococcus hemolyticus in one. The cases of infection due to anaerobes were no symptoms essentially different from those of analogous infections due to aerobes. In some cases the presence of the bacteria in the blood may be the cause of septic character, whereas in others the manifestation of a transitory bacteremia by the method of Boez facilitates also the isolation of bacteria with the characteristic facultative anaerobes (staphylococcus).

The authors employed different treatment. In two cases an attempt at cure was made with intramuscular injections of anti-perfringens serum obtained in both of these cases in the course of the disease the authors' treatment with specific serum is radical for cases caused by anaerobic bacilli.

# GENITO-URINARY SURGERY

## ADRENAL, KIDNEY, AND URETER

Henline, R. B. Traumatic Injuries of the Upper Urinary Tract Following Instrumentation. *J. Urol.* 16, 1934, 61-18.

The author believes that instrumental rupture of the ureter following intra-ureteral instrumentation is less rare than the literature indicates. He reports nine cases. Three required surgical drainage and two required nephrectomy because of severe infection of the kidneys. In the remaining four, recovery followed palliative treatment.

In experiments on dogs it was found impossible to rupture a normal ureter by forceful dilatation or by forced syringe injection in retrograde pyelography. When the ureters of three dogs were forcibly ruptured with a silver wire both retrograde and excretion urography demonstrated extravasation. The ureter of one dog punctured by a fine wire failed to show extravasation in the intravenous urogram.

Henline concludes that excretion urography will indicate the existence and extent of gross injury to the ureter and serve as a guide to surgical treatment.   
IRVING P. GRACEY, M.D.

Hichtenberg, A. von. Excretory Urography (Urographie excretrice). *J. d'ur. méd. et chir.*, 1933, xxxvi, 455.

The author prefers the term "excretory urography" for the method he introduced four years ago to the terms "descending pyelography" and "intravenous pyelography" because the latter do not indicate the nature of the procedure. The method is not merely an anatomical demonstration of the kidney pelvis. It is a true physiological test of kidney function by excretion whether the contrast is administered intravenously by rectum, or by mouth. The urogram differs fundamentally from the pyelogram obtained by ascending pyelography. The author believes that ascending pyelography should be called "filling urography."

A disadvantage of the rapid acceptance of the author's method has been its use in cases in which it was not indicated. Some investigators have claimed that the contrast medium may not be excreted even by the healthy kidney, but the author maintains that the contrast substance is eliminated by any kidney in proportion to its capacity for elimination.

The contrast medium has been found to be eliminated largely by the glomeruli. There is only a slight absorption by reflux of the substance through the tubules. Therefore the test is an excellent one for demonstrating lesions of the glomeruli. After using the method in more than 5,000 cases over a period of more than three years the author is convinced of its value as a test of kidney function.

Excretory urography is indicated absolutely in cases in which filling urography is difficult or impossible for anatomical or technical reasons, in those in which filling urography is negative or the pictures are not clear, and those in which filling urography may aggravate the condition and may be dangerous. It is indicated relatively in cases in which a general view of the whole urinary tract is desired, cases in which information is sought with regard to tonus or a disturbance of the dynamics of the urinary tract, cases of retention in which it is desired to determine the mode of excretion of the excretory tract, and cases of disease of the adnexa in males and females in which the effect on the urinary tract must be determined.

Excretory urography is not of value for the early diagnosis of kidney tuberculosis as slight defects in filling or in the outline of the calyces may be due to other causes. In advanced cases it shows the extent of the lesions. It is of the greatest importance in non-specific infections of the kidney such as acute suppuration and chronic pyelonephritis. Simple changes of tonus can be differentiated from anatomical lesions and definite dilations. From the condition of the ureter it is possible to tell whether the disease of the kidney is primary or secondary and to establish the indications for operation. The special field of excretory urography is lithiasis, both from the point of view of prognosis and that of indications for conservative operation. In cases of tumor of the kidney the procedure is of value only in conjunction with other methods of examination. In cases of tumor of the bladder it often gives better pictures than cystography because there is no irritation of the bladder by the filling. In cases of retention of urine it is of very great value because it shows not only the anatomical condition but also the nature of the process. Often the retention is due to a functional change brought about by changes of tonus which can be overcome with restoration of normal function. In true hydronephrosis the essential factor is not the size. The size is only the manifestation of a compensatory functional process to protect the kidney against inevitable hypertension, it represents the adaptation of the muscle to the changed capacity for elimination of the pelvis. Therefore conservative surgery is possible in this condition. An essential part of kidney retention is a disturbance of innervation. Sometimes normal evacuation can be restored by denervation.   
ANDREX GOSS MORFAN, M.D.

Ravassini, C. Excretory Urography (L'urographie excretrice). *J. d'ur. méd. et chir.*, 1933, xxxvi, 464.

Ravassini prefers the term "excretory urography" to the term "descending pyelography." Excretory

urography is an essentially physiological method which in the majority of cases gives valuable information with regard to the anatomical and functional condition of the kidneys. It shows the secretory capacity of the renal parenchyma and the motility of the ureters and pelvis. The indications are limited to venous insufficiency of the kidneys or liver. If the kidneys are functioning well the shadow of the kidney pelvis and ureter appears within five minutes after the injection and that of the bladder within from fifteen to twenty minutes. The greater part of the contrast substance is eliminated within from an hour to two and a half hours.

Caution must be used in interpreting spots in the parenchyma as these are not constant they appear constantly. When they are constant they suggest a tuberculous cavity not communicating with the pelvis. In fifty cases of tuberculosis in which such spots appeared the presence of a cavity was confirmed by operation.

Lichtenberg and Heckenbach say that the altered movement of contraction and dilatation of the pelvis can be seen on the urogram but the author has not observed it. He has noted that there is some times no contrast shadow even when the kidneys are normal. This does not mean that the kidney does not eliminate the contrast substance it eliminates this substance in proportion to its capacity for elimination. Among the various causes for failure of the kidney shadow to appear are exaggerated diuresis, hypertonicity and hiding of the kidney by meteorism. The bladder shadow serves as a control showing that the contrast substance has been eliminated.

From experiments on frogs Hughes and Peterfi concluded that uroselectan is eliminated particularly by the glomeruli. Von Lichtenberg therefore concluded that uroselectan is particularly adapted to demonstrate lesions of glomeruli. From experiments on rabbits Di Maio concluded that it is eliminated chiefly by the tubules.

The different methods recommended for judging renal function by excretory urography such as the quantitative determination of iodine in the urine are complicated and of no practical value. Deductions in regard to function must be always reliable. The author reports cases in which the urograms roentgenograms and they are not always reliable. The author reports cases in which the renal pelvis suggested enormous dilatation of the renal pelvis and ureters but operation showed normal conditions. In experiments on the isolated ureter of the dog Mingers found that the ureter reacts to contrast substances by changes in form and size. Abrodil and uroselectan have a different effect. Therefore is the interpretation of the urogram it is important to know which was used.

Von Lichtenberg believes that the density of the shadow depends on the degree of kidney function but the author has not found this to be true. He states that the density of the shadow may depend on extrarenal factors. It is important in judging function to know the time that elapsed between

the injection and the appearance of the shadow how long the shadow persisted and when it disappeared. Only a positive kidney shadow has a functional value. If there is no kidney shadow the conclusion must be drawn from the shadow of the ureters and bladder. A distinct bladder shadow shows that the kidney is functioning whether the kidney shadow appears or not.

Excretory urography is especially adapted to the study of the late orthopedic and functional results of conservative kidney surgery. Conservative operations on the kidney do not injure but on the contrary improve kidney function.

Excretory urography is particularly important in anomalies of the kidney and ureter. In hydroureter it gives a more accurate picture than ascending pyelography and often furnishes indications for conservative operation. Its value in hidroureter is well known. Calculi invisible to ordinary roentgenography may be rendered visible. In renal tuberculosis it is very useful and sometimes indispensable particularly as ascending pyelography is often impossible painful or dangerous in this condition. Correct interpretation of the roentgenograms requires experience. Details that would escape the eye of the ordinary practitioner are clearly evident to the specialist. In cases of renal tumor the method is often insufficient for diagnosis.

ABSTRACT GROSS MORGAN & M.D.

Ward M. R. Excretory Urography (J. urol. 1933, 27, 473)

The author has used excretory urography since 1929. It makes possible a study of the activity of the kidney and ureters under conditions that are perfectly normal except for the secretory stimulus resulting from the injection. Care must be taken to prevent pressure on the ureters while the roentgenograms are being taken as this interferes with physiological conditions. The upright position is the normal physiological but as in this position the normal pelvis and ureters drain quickly and the shadows are slight the roentgenograms are usually taken with the patient lying down. It is a good plan to place the patient in the Trendelenburg position for a short time fifteen minutes after the injection and make a roentgenogram then reverse the position with the feet down and make another roentgenogram five minutes later.

Of the several roentgenograms those taken five minutes after the injection are the most valuable for general information. The normal calyces and pelvis are visible at this time. Absence of a shadow indicates retardation of excretion. If there is partial stasis the most intense shadow is seen after half an hour. Slight and changing shadows appearing early and disappearing early are an indication of normal function. Dense shadows constant in form and normal they indicate normal secretion but interference with evacuation. Shadows that appear late indicate interference with secretion. A ureter filled throughout its length indicates loss of tone.

# GENITO-URINARY SURGEY

The method is particularly valuable in cases of calculus, hydronephrosis and tuberculosis. In the discussion following the reports of Von Lichtenburg, Ravasini and Ward, LASIO said that descending urography is of great value only in cases of quite marked morphological changes. In the early stages of tuberculosis and tumor the pictures are not sufficiently clear for diagnosis. The procedure shows whether a kidney is functioning but not whether it is capable of taking over the function of the other kidney. Separate examination of the urine from the two ureters is necessary for this.

DOS SANTOS stated that excretory urography is the first method of urological examination that should be used systematically. It gives information regarding the morphology and function of the kidney which is sometimes sufficient to establish the prognosis and indications for operation. However, as the picture depends on elimination, it may not be sufficiently clear if elimination is abnormal. Under the latter condition, ascending pyelography may be necessary. For finer details of function it may be necessary to use chromocystoscopy, phenolsulphonphthalein, and catheterization of the ureters. However, the systematic use of excretory urography greatly limits the necessity for ascending pyelography and catheterization of the ureters. A valuable supplementary method is arteriography by the injection of uroselectan or abrodil into the aorta, which gives a picture first of the abdominal aorta and then of the kidney pelvis.

CHEVASSU emphasized that, in spite of the great interest in excretory urography, this procedure cannot replace the determination of azotemia, the determination of the constant, and catheterization of the ureters in the study of the function of the kidney, or ascending pyelography in the study of the anatomy of the kidney.

LEPOUTRE said that excretory urography is extremely valuable when it is positive. It may show a hydronephrosis, a ptosis or abnormality of the kidney with much less difficulty and chance of error than ascending pyelography. When it is negative, that is, when it does not produce a shadow on the painful side, ascending pyelography must be used. It is of great value in renal tuberculosis if its results are interpreted with care. In cases in which catheterization of the ureters is impossible it may render a double exploratory lumbar incision unnecessary. In cases with a poor constant it may confirm the existence of bilateral lesions and show the nature of the changes in the two kidneys.

RUXT stated that excretory urography does not take the place of other methods of examination of kidney function. While it is not dependable in renal tuberculosis, it is of value in cases in which catheterization of the ureters is impossible as it permits diagnosis without exploratory incision. PASTEAU said that excretory urography is an excellent exploratory method for determining what other methods of examination are necessary. The

time of appearance and disappearance of the shadow gives valuable information in regard to the secretion of the kidney, and the way in which the shadow of the pelvis and ureter disappears shows the conditions of excretion in kidney and ureter. Theoretically it should be superior to ascending pyelography, but sometimes the shadows are too pale.

OECONOMOS reported that in 80 per cent of cases excretory urography gives a more or less distinct picture of the kidney, pelvis, and ureters, but the picture is not so clear as that produced by ascending pyelography. It shows disturbances of elimination rather than secretion of the kidney, for if secretion is normal and excretion is interfered with the pictures are very clear.

CASPER stated that excretory urography cannot be substituted for ascending pyelography and is not always reliable as an indicator of kidney function. In cases in which elimination is interfered with the shadow may be very dense when the kidney is seriously diseased, and if the pelvis is insufficiently closed so that it is always empty there may be no shadow when the kidney is normal. If the picture is taken during systole of the pelvis the pelvis will appear very small, whereas if the picture is taken during diastole there may be no excretion of the opaque substance though the kidney is normal.

BEER said that excretory urography does not give as clear pictures as ascending pyelography. It is necessary in cases in which cystoscopy and catheterization are impossible and may be of value in clearing up certain obscure abdominal conditions. CIFUENTES emphasized that a great deal of the value of excretory urography depends on the interpretation of the urograms. The most valuable roentgenogram is the one taken five minutes after the injection.

PASCUAL discussed the indications for excretory urography in renal tuberculosis on the basis of 289 roentgenograms taken in 163 cases.

PASCHKE presented urograms of cases of pyelitis, nephrolithiasis, and cystic dilatation of the ureter.

AUDREY GOSS MORGAN M D

Chabanier, H., and Lobo-Onell, C. Elimination Urography and Comparative Estimation of the Function of the Two Kidneys (Urographie d'élimination et exploration fonctionnelle comparée des reins). *Presse méd.*, Par., 1933, xli, 2010.

This article is a discussion of the question whether intravenous pyelography meets all requirements for the determination of the comparative function of the two kidneys. As a rule the function of the kidneys is estimated by comparing (1) the pyelo-ureteral shadows (von Lichtenberg), and (2) the time of appearance and disappearance of those shadows (Ravasin).

In the authors' opinion the method is open to numerous objections. The two chief objections to it are based on the following facts: (1) the concentration of the opaque substance is influenced by anything interfering with the flow of urine (e.g., ob-



struction at the ureteral orifice) and (2) the depth of the column of urine in the ureter is variable depending upon the degree of diuresis and the rate of flow in the ureter.

The authors conclude that when ureteral catheterization is practicable it should be done especially as it makes bacteriological information available at the same time.

MARSH W. POOLE, M.D.

Mertz H. O. and Hamer H. G. The Lateral Pyelogram: An Investigation of Its Value in Urological Diagnosis. *J. Urol.* 934 x 1 23

In urological diagnosis the authors make a lateral pyelogram to obtain information supplementing that yielded by the anteroposterior film. Standard pyelographic media and methods of injection are used.

Satisfactory lateral pyelograms permit a study of the vertical position of the kidney, disclose any rotation or anteroposterior displacement of the kidney and show the outline of the pelvis and the course of the upper part of the ureter as it enters the pelvis. They often lead to a more complete understanding of the pathological changes present and occasionally confirm a differential diagnosis which would otherwise remain doubtful.

HENRY L. SART, M.D.

Taylor W. N. Carbuncle of the Kidney. *Am. J. Surg.* 1933 550

Taylor reports a case of carbuncle of the kidney and describes the condition as a metastatic hematogenous localized renal infection.

The condition is practically always closely associated with an infectious lesion which acts as a focus of blood stream invasion. In 70 per cent of the ninety-five reported cases it is thought to be secondary to a skin infection and in 1 per cent was attributed to a respiratory dental or glandular condition.

It is practically always due to the staphylococcus aureus. Pathologically, the lesion is primarily one of multiple foci of infection of the interstitial tissue of the kidney. The treatment is surgical.

HARRY W. PLACEMER, M.D.

## BLADDER URETHRA AND PENIS

Horrofmomel N. and Katz Galatz T. A Contribution to the Study of Urethrography. (Continued) *J. Urol.* 933 x 3

The authors state that urethrography is capable of giving much information that cannot be obtained by ordinary methods of urethral examination such as the use of bougie and sounds and urethroscope examination. The contrast medium must be sufficiently radiopaque to give adequate visualization of the ureters and kidneys. It must not be eliminable by the normal channels, miscible with urine, easy to prepare and non-toxic. The substances best meeting these requirements are the contrast and uroselectan.

The urethrograms are made by two methods: the ascending and the descending. In the descending method the dye uroselectan is given intravenously and when the patient experiences a desire to urinate a roentgenogram is made as the dye accumulates in the bladder. This is done with the patient in the lateral position so that the penis can lie along the surface of the plate. The legs are so arranged that they will not overshadow the urethra. In the ascending method the uroselectan is introduced into the bladder through the urethra under gentle but definite pressure. No automatic devices are employed. When exploration of the anterior urethra is desired, the fluid is introduced under a pressure which is not sufficient to overcome the resistance of the sphincter. When the posterior urethra is to be explored a somewhat greater pressure is employed.

Proper interpretation of abnormal images requires a knowledge of normal variations and considerable experience. When the bladder is emptied the shadow will be found pear-shaped. The moderate pressure of injection is given from below; the moderate pressure will cause dilatation of the bulbous urethra and be the cause of its normal tonicity. Alteration of these will be completely free from fluid. Alteration of these two pictures usually indicates pathological changes.

Urethrography is of value in the study of urethral strictures, false passages, dilatation and diverticula, urethral calculi, abscesses of the urethra, prostatic Comper's gland and seminal vesicles and urinary fistulae.

The authors believe it should be used in all cases of suspected stricture, even before the urethra is explored with filiform bougie.

J. H. W. C. T. M.D.

## GENITAL ORGANS

Ilirz B. J. R. D. Verticillate Formation in the Prostate and Disease of the Neck of the Bladder. *Pr. Etiological R. (ari) in Hip Betw. Th. e Diverticuli Formation and Chronic Hyperplasia of the Prostate Gland.* *Ann. Surg.* 1933 933 x 1 1

The author calls attention to the gravity of small diverticula in the prostate resulting from necrosis. He believes that such diverticula can give rise to chronic obstruction resulting in dilatation of the ureters and kidneys. In the bladder and dilatation of the urinary tract in the bladder and dilatation of the diverticula formation in the bladder and dilatation of the ureters and kidneys are general. The diverticula are generally due to eneral infections which do not result in true prostatic

abscesses but cause such destruction of prostatic tissue that small cavities are formed. In some cases they are due to infection secondary to some other focus. Whatever the source of the infection, drainage usually occurs through tortuous pathways and is inadequate. Under such circumstances secondary infection is very common, and with it the prostate becomes swollen and the prostatic urethra narrowed and tortuous. When the infection persists, the entire prostatic area becomes hypertrophied and sclerosed. The seminal vesicles are involved in the process and become the site of infectious foci.

The symptoms are those of chronic prostatitis with polyuria, burning on urination, a morning drop, and symptoms due to the backing up of urine. The diagnosis is established by cystourethroscopy and urethrogram. Anteroposterior, right oblique, and left oblique roentgenograms should be made. They sometimes show the prostate to be shot through with diverticula which give it the appearance of a bunch of grapes.

The author advises operation for this condition before it results in the serious consequences described.

JOHN W. FRYER, M.D.

Caulk, J. R., and Patton, J. F. Postoperative Complications in Transurethral Surgery. *J. Urol.* 155, 1934, 117.

By means of a thermocouple placed in various media and in the prostate glands of men and animals the authors measured the heat produced in the prostatic tissue of the various types of high-frequency currents used in transurethral surgery of the prostate and compared it with the heat produced in the tissues adjacent to a cautery punch used similarly. Their findings showed that the heat of conduction

from the cautery is insignificant while the induced heat produced between the two electrodes of a high-frequency current is sufficient to cause tissue death for a considerable distance from the loop. These findings were confirmed by histological examination.

The authors give statistics demonstrating that complications are more frequent and the mortality is somewhat higher in cases treated by transurethral electrosurgery than in those treated with the transurethral cautery punch. They conclude that the instrument using a cautery current is the safest, and that the high frequency apparatus must be changed or discarded.

THEOPHIL P. GILBERT, M.D.

Ferguson, R. S. Pathological Physiology of Teratoma Testis. *J. Urol.* 155, 1933, 113.

The author discusses the quantitative secretion of Prolan A in cases of tumor of the testicle. The urinary excretion of Prolan A is determined by three factors: (1) the embryonal characteristics of the tumor, (2) the stage of the disease, and (3) the resistance of the disease to therapy.

From the estimated number of units in the urine, the type of tumor may be determined. In cases of embryonal carcinoma, the urine contains from 2,000 to 10,000 mouse units, in cases of seminoma, from 400 to 2,000 mouse units, and in cases of adult teratoma, from 50 to 500 mouse units. In cases in which the excretion of mouse units is not affected by surgery or X-ray irradiation the prognosis is unfavorable, whereas in those in which the units decrease and subsequently disappear, good results are to be expected.

Prolan A is believed to be produced by the basophilic cells of the anterior lobe of the pituitary gland.

J. SWIFT RITTER, M.D.

# SURGERY OF THE BONES JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES JOINTS MUSCLES TENDONS ETC

**Elliot G. R.** Chronic Osteomyelitis Presenting a Distinct Tumor Formation Stimulating Clinically True Osteogenic Sarcoma. *J Bone & Joint Surg* 1934 xvi 137

With few exceptions osteomyelitis in early childhood is diagnosed readily. Difficulty in the diagnosis is encountered usually only when the condition occurs in later life. The perplexing cases are those of rather slowly growing sarcoma and sclerosing osteomyelitis.

The author reports a case of a borderline condition which because of the marked plasma cell reaction Ewing believed to be a chronic inflammation and described as an osteomyelitic plasma cell myeloma.

The importance of a very complete clinical history and a good roentgenogram properly interpreted is emphasized. Occasionally biopsy is necessary although it is generally believed that biopsy should be avoided if possible. Biopsy should be done by the aspiration method or the punch method.

NORMAN C. BOLLOCK, M.D.

**Oberhammer J.** The Formation of Circumscribed Necroses and Sequestra in Osseous Tuberculosis (*F. max. ne di necrosi circoscripte e di sequestra nella tubercolosi ossea*). *Chir. d. Org. e di membra* 1933 x 317

Whereas in pyogenic osteomyelitis the formation of sequestra may be considered a sign of resolution in osseous tuberculosis it is a part of the pathological process. In osteomyelitis it is the healthy tissue of regeneration which determines the demarcation and sequestration whereas in tuberculosis this is determined by a specifically diseased granulation tissue. Therefore it is apparent that in tuberculosis the formation of sequestra has nothing to do with the healing of the focus but represents a phase of the development of the disease.

The author reports twelve cases of osseous tuberculosis in which large sequestra were formed. While in most of them the condition was studied only by roentgen ray examination in a few surgical treatment was given and the tissue was examined. The majority were cases of caseous tuberculosis. This form of tuberculosis of bone produces not only central foci but also coneiform necrotic areas similar to an infarction in an articular extremity of a long bone such as the head or lower end of the femur. The coneiform foci are subchondral and usually represented by a more or less regular triangle with its base toward the articular surface and its apex toward the bony diaphysis. Occasionally the foci are round.

The genesis of the necrotic areas is not definitely understood. The morphological findings suggest a rather acute process. If these areas represented true infarcts there would be emboli in some of the vessels or an obliterating endarteritis would be found. The findings are not constant. The clear osseous structure of the circumscribed foci may be explained by the rapid cessation of the involved area long before the granulation tissue has had an opportunity to destroy the bony trabeculae. In the stage during which the necrotic zone retains its connection with the surrounding tissue the patient usually does not consult the surgeon as there are no symptoms. As a rule symptoms develop only when the joint surface is involved. In the development of the process an area is surrounded by tissue which is capable only of destroying bone and not forming it. The two areas then become very rapidly demarcated. This delimitation but not complete separation of a necrotic zone is associated with more pain and limitation of function. The focus undergoes gradual reabsorption but as the process may require many years healing may take place before complete disappearance of the focus. In the process of healing the tuberculous granulation tissue becomes replaced by a healthy granulation tissue. The latter however lacks osteogenic properties. This is manifested in the roentgenogram by intensification of the clear encircling zone. The necrotic bone serves as a focus for new bone growth. In this way repair seems to start. The entire process may be easily followed in the roentgenograms included in the article.

In the treatment of the condition the local on and nature of the process must be considered. Conservatism should be the rule unless there has been a disturbance of the joint surface. Resection of the joint may be done to hasten recovery and rehabilitation on for economic reasons relieve pain and reduce the chance of secondary tuberculous lesions.

A. LOUIS ROSS, M.D.

**Allende G.** Bone Syphilis in the Second Period of Childhood (*La sífilis ósea en la segunda infancia*). *Rev. d. H. p. y G. m. e. l.* 1933 xi 16

The author reports seven cases of bone syphilis in children from five to thirteen years of age and supplements the reports with photographs and roentgenograms. These cases differed in many respects from cases of bone syphilis in young infants. In almost all of them the syphilis was activated by trauma. The lesions corresponded to those of tertiary syphilis in the adult. Three of the patients had a diffuse gummatous osteomyelitis, two had a syphilitic hyperostosis, one had the osteo-arthritis described by Fournier and one had a white swelling with enormous enlargement of the joint and suppura-

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tion but no bone lesions demonstrable on roentgen examination. One of the cases showed the leopard-skin roentgenogram of the epiphyseal form described by Lance and Hue, but the condition had invaded the epiphysis, the metaphysis, and the joint cartilage, resembling a malignant bone tumor.

The lesions at this age are most apt to be localized in the metaphysis and cause disturbances of growth. In the cases in which the joint cartilage was affected there was an increase in the length of the bone, and in two cases in which the tibia was affected without involvement of the fibula the tibia was very much curved and there was a marked pes valgus. In one case of syphilitic hyperostosis the length and thickness of the tibia were enormously increased.

Sequestra were formed in a number of cases. Adenopathy was rare. It is generally caused by secondary infection. This is a point usually differentiating the condition from osseous tuberculosis. However, cases of true syphilitic arthritis with bone lesions have been described. One of the cases reviewed by the author was an example of this condition. As the Wassermann reaction remained negative there was doubt as to whether the condition was syphilis or tuberculosis. In such tendency toward eburnation of the bone. In such cases biopsy of the glands is of great aid in establishing the diagnosis.

Suppuration occurred in five of the seven cases. In most reports it is described as abscesses due to the breaking down of gummata which have no tendency to spread, a characteristic differentiating them from tuberculous abscesses. However, in some of the author's cases there were enormous abscesses with frank fluctuation and migration to the thigh. In one case they had their origin in an arthritis of the hip. Most surgeons advise against operation for these abscesses, but the author finds that surgical evacuation improves the general health and shortens the time required for recovery. The serological reactions are frequently negative in these cases.

As a rule potassium iodide, bichloride of mercury, and sulfarsenal were used in the treatment. In some cases bismuth and neosalvarsan were employed.

**Aguilar, J. G., and Maruri, C. A.** Bone and Joint Syphilis (Sifilis osteoarticular). *Arch. de med. cirurg. y especial*, 1933, xiv, 1403.

This article is based on a series of eighteen cases of syphilitic arthritis and thirty six cases of osseous syphilis.

Two pathological processes, destructive and constructive, are combined during the development of gummata. The granulation tissue of the gumma infiltrates the bone, causing necrosis. At the same time the surrounding tissue is stimulated to produce new bone. The surface of the diseased bone thus appears irregular, roughened, and eroded, and the bone as a whole may be larger than normal. If the entire bone is involved, it may become hardened and thickened. As a result of excessive absorption

osteoporosis may result. The abnormal fragility of osteoporosis may result in fractures.

Among the cases reviewed there were twenty-five or required and eighteen of congenital syphilis. In both congenital and acquired syphilis periostitis frequently develops during the eruptive stage. It may occur simultaneously in many bones. Gummatous periostitis developing in the late stages of syphilis is characterized by chronicity and the size which the lesions attain. Large ulcers which discharge a mucoid, foul smelling pus follow the regressive changes in these lesions. The surface of the bone may be denuded, and even dead bone may appear in the floor of the ulcer. Gummatous osteitis is frequently secondary to periostitis. An entire bone may therefore be completely destroyed.

Syphilis of the joints may be manifested as a synovitis or an osteo arthritis. In the synovial form there are no characteristic roentgenographic signs. A chronic resistant hydrops may develop. The knee is involved most frequently. There is little interference with motion, and only slight pain.

The lesions of osteo arthritis are varied. Arthritis may follow the rupture of an intra osseous or periosteal focus into the joint cavity. Articular cartilage may be destroyed. Joint ankylosis with contractures may develop. They occur most frequently in the fingers and toes, the condition being then often confused with arthritis deformans. In the larger joints the condition may be confused with tuberculosis. Of fifty cases, positive serological reactions were obtained in forty five (90 per cent).

Treatment with salvarsan and bismuth has yielded very satisfactory results in all cases.

**Pelree, C. B.** Giant-Cell Bone Tumor. Some Considerations of Treatment. *Radiology*, 1933, xxi, 348.

The giant-cell bone tumor is a sharply circumscribed central tumor of bone in which large multinuclear giant cells predominate. These cells are distinguished from foreign-body giant cells by the central position of their nuclei. The tumor has a spindle celled stroma and sometimes cystic spaces containing bloody fluid. Its growth is limited by the epiphyseal line, but after the epiphysis is closed, it may extend to the joint. Malignant degeneration may result from excessive repair activity.

From the standpoint of treatment the giant-cell tumor may be regarded as a benign but progressive metaplasia which may result in disability if it is not eradicated. Biopsy should not be necessary as the diagnosis can be made by roentgen-ray examination. The usual treatment has been curettage and cauterization, but many surgeons do not fully approve of this method. Especially when the bone involved is a weight-bearing bone, complete curettage of the growth may be impossible without interfering with its function. Roentgen therapy has yielded good results in many cases. It is based on the theory that the giant cells are of an undifferentiated or embryonic



procedures Clinically, a protracted "rheumatic" inflammation of a joint which gradually turns into a tumor albus is tuberculous from the beginning. There is no reason to assume that an acute rheumatism which occurs in a person with pulmonary tuberculosis is due to a secondary infection. Rheumatic manifestations following injections of tuberculin are well known.

The anatomical and bacteriological proofs of the correctness of this theory of tuberculous rheumatism are found in cases in which there are specific cellular reactions in the joints or aspirated joint fluid yields the tubercle bacilli on culture or guinea-pig inoculation, but the author admits that in the majority of cases these proofs are lacking. According to the Lyons School of Medicine, headed by Poncet, the tubercle bacillus may produce simple inflammatory (non specific) lesions in serous membranes.

The manner in which such a tuberculous rheumatism is brought about is conjectural. Four theories have been advanced. According to one, the condition is due to diffusible toxins, whereas according to another it is produced by adhesive poisons. Both of these theories are unsatisfactory. According to a third theory, the condition is due to the direct action of the bacillus, and according to a fourth, it is due to the action of a filterable virus.

Le Sage believes that tuberculous rheumatism may be due to the action of the bacillus itself, and that in some cases this bacillus produces a non-specific inflammatory reaction. He is of the opinion also that there is a virus form which may cause rheumatism and then change very slowly into the bacillary form without causing obvious clinical signs of tuberculous infection. This apparently is the explanation of cases of rheumatism which go gradually over into the tumor albus type of joint. At this later stage the tubercle bacillus may be found on culture or guinea-pig inoculation of the joint fluid. The author reports seven cases which support these conclusions. Clinically, tuberculous rheumatism is characterized by local attacks with more or less brief periods of respite and obstinate relapses. This may produce chronic arthritis, cysts containing rice bodies, and retraction of the palmar aponeurosis in the hands, three clinical forms of the disease which are often not recognized as being of tuberculous origin.

CHESTER C. GUY, M.D.

Brown, L. T., and Kuhns, J. G. Mechanical Instability of the Shoulder Joint in Relation to the Prevention and Treatment of Painful Shoulders. *J. Bone & Joint Surg.*, 1934, **xxi**, 88.

This article is an illustrated discussion of the factors predisposing to muscular, tendinous, and capsular injuries about the shoulder joint. The same factors may defeat conservative or operative methods employed to relieve these injuries.

The authors emphasize that mechanical instability of the shoulder joint is related directly to poor body mechanics in the thoracic and cervical spines and the thorax as faulty posture allows the shoulder

joint to assume a position that predisposes it to injury and renders treatment of the injury difficult if not unsatisfactory. The shoulder girdle is so constructed that when the body as a whole assumes a drooped position the habitual position of the shoulder is one of constant strain on the structures which stabilize the joint.

When poor postural habits are corrected, the head of the humerus is held in the glenoid cavity by the ligaments alone and no undue strain is placed on the muscles. The glenoid cavity then assumes such an angle that the head of the humerus can rest on its lower lip and thus further relieve the strain on the muscles attached to the greater tuberosity.

JAMES K. STACK, M.D.

Ghormley, R. K. Low Back Pain, with Special Reference to the Articular Facets, with the Presentation of an Operative Procedure. *J. Am. M. Ass.*, 1933, **ci**, 1773.

The articular facets must be regarded as the only true joints in the spinal column. As they are true joints, hyaline cartilage covers their surfaces and synovial membrane lines their articular capsules. The articular capsule is more redundant and loose in the cervical region than in the lower portion of the spinal column. The pains are often static, that is, they are relieved by certain postures and greatly exaggerated by others.

The degenerative changes which occur characteristically in hyaline cartilage may be seen in the articular cartilage of these facets, together with the eburnation of the underlying bony trabeculae. This degeneration may go on to complete loss of the cartilaginous surface and irregular hypertrophy of the margins similar to that in advanced stages of degeneration or hypertrophic arthritis of other joints.

There is evidence in the literature that, by some, the facets have been regarded as causes of sciatic pain. The author believes they cause not only sciatic pain, but also lumbosacral pain with or without sciatic pain. Most patients who complain of pain of sudden onset low in the back which is brought on by some activity often trifling in its severity, but usually involving a twisting or rotary strain of the lumbosacral region are probably victims of the "facet syndrome." Proof of these changes is in many instances difficult to secure, but much aid in establishing the diagnosis will be derived from oblique roentgenograms of the lumbosacral region. Before operative treatment is decided on, the surgeon must be certain of the joints to be stabilized or the result may be poor. The combined lumbosacral and sacroiliac fusion described by the author has proved much more satisfactory than any other type of operative procedure.

Freiberg, A. H., and Vinke, T. H. Sciatica and the Sacro-Iliac Joint. *J. Bone & Joint Surg.*, 1934, **xxi**, 126.

Freiberg and Vinke believe that sciatica is rarely caused by narrowing of the lumbosacral space. They

The straight leg raising test which has hitherto been used to demonstrate sciatic pain in connection with the sacro-iliac joint may be more reasonably explained by the fact that the pyramiform anatomical is the only one which has a very intimate relationship with the sacro-iliac joint and the sciatic nerve. The authors' anatomical studies on the cadaver demonstrated that during the straight leg raising test the sacrotuberous ligament and pyramiform muscle particularly are put under tension long before stretching of the sciatic nerve occurs. Therefore it is possible to consider the mechanical effect of pressure on the sciatic nerve as the result of contraction spasm of the pyramiform muscle which irritates it due to its close relationship to the pathological changes in the sacro-iliac joint. The authors admit that this explanation of sciatic pain lacks direct proof but they believe it is correct. This association with disease of the sacro-iliac joint lacks direct proof but they believe it is correct. This manipulative procedures for sciatic pain may be due to the release of adhesions between the pyramiform muscle and nerve sheath rather than to the stretching of the nerve trunk and that an operation on the tendon of the pyramiform at its trochanteric attachment might be attempted in cases of very obstinate sciatic pain.

P. L. C. Cooley M.D.  
Osteochondritis of the Psoas  
Musculature

The author reviews the history of our knowledge of osteochondritis and related diseases. Two cases of osteochondritis of the scapula. The first case re-

The author reports news in the literature of osteochondritis centers and reports two cases of osteochondritis of the patella. The first case reported by Gellman was of the simple primary type involving the patella alone. The patient was a six year old boy with intermittent pain and weakness in the knees but no history or physical findings of induration, swelling, redness or a rise in the local or general temperature. Roentgen ray examination revealed a typical ragged fragmented patella with areas of thickened dense tissue and incomplete ossification. Rest in bed for seventeen days without improvement relieved the symptoms. A follow up roentgen ray examination two years later showed that the patella had regained its normal structure but was larger than normal for the child's age.

Chernley R K, Kirklin B R, and Bray E A  
Tuberculo l of the Knee Joint: A Comparison  
of Its V rbid Anatomy with Its Roentgenolog  
ical Manifestations *Am J Roent* 1933  
x 747

l marginal cross in the non tuberculous cases is seen also in the present material. The tuberculous variety does not exclude the tuberculous nature and interruption of the cortex of bone occur in both types of the disease. Wh is preserved in the joint space or a long period is more likely in the cases of tuberculosis. In tuberculous area of non tuberculous cases. In tuberculous and bone greatest destruction both in cartilage and non tuberculous destruction both in marginal central. Proportion may be either central or marginal. A large proportion of bone is seen in both varieties in a large proportion of cases and roentgenograms of the tuberculous joints may show sufficient destruction of Charcot joint trophy to simulate the picture of a Charcot joint. In late cases of both types destruction is advanced and distinction is often impossible. Abscesses of bone and sequestra are definite indications of tuberculosis but in a large percentage of cases sequestra are not visible in the roentgenogram. In the questionable early cases in which laboratory data are essential for the determination of the type of disease the roentgenogram offers little impetus toward the swinging of the pendulum to one side or the other. In moderately advanced cases the decision may often be greater and to the diagnosis.

A comparison is made between the roentgenogram and the gross and microscopic pathological specimens in sixty-five cases of tuberculosis and eleven cases of non-tuberculous arthritis of the knee joint. In a large percentage of cases the roentgenograms accurately demonstrate the pathological lesions, but, because of the similarity of the two processes, they cannot be considered in most cases as dependable diagnostic evidence. The principal shortcoming of the roentgenogram is its failure to demonstrate the early pathological changes in bone or synovia and the presence of areas of sequestration. The principal advantage of the roentgenogram is the demonstration of bone lesions which may remain hidden beneath more superficial disease of the synovia or beneath structures that appear normal.

### SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Pochintesta, A. Bone Tuberculosis and the Method of Robertson Lavallo (La tuberculosis ósea y el metodo de Robertson Lavallo). *An Fac de med, Univ de Montevideo*, 1933, LVIII, 487

The author discusses the development, scientific basis, technique, and results of the Robertson Lavallo operation.

The theory of the operation is obscure and does not conform to the accepted principles of pathology. Cure is supposed to be effected by resolution, no account being taken of fibrocalcareous encystment or remineralization. The "hyperemic strangulated focus" is inconstant and may be present in non-tuberculous processes. It may be confused with congested marrow. Its roentgenological determination is extremely difficult. In fact, Pochintesta admits that even after minute study of hundreds of roentgenograms made with Robertson Lavallo, he is unable to find or define it, and he considers it an illusory and fugitive lesion. He states also that the difficulties of implanting the graft in the strangulated zone, provided this zone can be localized, are at present insurmountable.

Pochintesta has collected sixty reports of this operation, chiefly from the Argentinian, Italian, and French literature. Sixteen per cent of the patients were cured and 12 per cent were benefited. Of forty-four patients operated on in Uruguay, 15 per cent were cured and 18 per cent were benefited.

Two postoperative stages are recognized. The first, which lasts for from four to six months, is characterized by immediate and absolute cessation of pain and general improvement. Immediate relief of the pain is a characteristic result of the operation, but a sedative effect would be obtained by any decompression. Canalization of the bone without the insertion of a graft would be sufficient to produce it. The theory of autogenous vaccination through the medium of the graft is being more widely accepted as an explanation of some of the beneficial effects of the operation. In some cases the first stage of the postoperative period is followed by a relapse.

The statistics are therefore not an absolute index of the results of the operation. They show only the results of inaccurate technique or deliberate modifications. Ultimately great advances will probably be made in this new field when its problems have been put on a scientific basis. The value of these methods lies at present in the obscure but effective action of the graft in the vicinity of a tuberculous lesion, which aids calcification, modifies trophism, changes the circulation, and intensifies the factors of defense. The method has opened up new problems for the investigator and surgeon. The operation can hasten cure considerably if it is done at the proper time and followed by correct after-treatment.

The article is supplemented by roentgenograms, diagrams, and an extensive bibliography.

M. E. MORSE, M.D.

Koch, S. L. Complicated Contractures of the Hand, Their Treatment by Freeing Fibrosed Tendons and Replacing Destroyed Tendons with Grafts. *Ann Surg*, 1933, LCVIII, 546

Infections in the hand follow the tendon and muscle sheaths and the worst damage is found where the exudate has been under the greatest tension, as in the digital tendon sheaths and under the anterior annular ligaments. In attempts at surgical repair it may be necessary to shorten a tendon, as for example, when flexors become fixed in a relaxed position during acute infection. On the other hand, if the tendons have been contracted during the infection they must be lengthened to restore function. Stiff joints must be well mobilized before tendon surgery is done.

Several specific cases are reported. In one, the flexor pollicis longus was enlarged and adherent to the base of the proximal phalanx of the thumb, preventing complete extension at the interphalangeal joint. Freeing this tendon and covering it with fat resulted in normal function. In another case, the flexor profundus of a finger in fixed flexion contracture was found seven months after the injury to be adherent to the flexor sublimis at its bifurcation. When this adhesion was relieved surgically the contracture was cured. In a third case the sublimis tendons to 3 fingers were sacrificed to allow room for the profundus, and the distal fragment of the latter was sutured to the proximal fragments of the sublimis and the profundus combined. According to Bunnell, the loss of the sublimis tendon is hardly noticed. Five other cases with more extensive disability are reported with details of the technique of treatment and illustrations.

Tendon grafting is necessary for the bridging of gaps caused by extreme contracture of the proximal fragment of a severed tendon, for cases in which infection has caused so many adhesions around a sutured tendon that it is impossible to free them and obtain a workable tendon, and for cases in which there has been complete destruction of a tendon. In the finger the bed is prepared for the tendon graft by removing all scar tissue and fragments of the old



tendon The author prefers free exposure by lateral incision to the tunneling advised by some surgeons. End-to-end suture of the graft to the tendon is the method of choice. It is better to attach the distal end of the graft directly to the bone after removing the distal fragment of the torn tendon. On the small bone of the phalanx instead of trying to drill the small bone for attachment, the tendon graft may be looped around the back of the bone and sutured to itself on the palmar side. For a gliding mechanism the tendon graft when removed from the foot is taken with its surrounding areolar tissue intact to preclude the necessity of wrapping with fat from another source. An annular ligament must be reconstructed at the second phalanx and at the middle of the proximal phalanx. This may be done by wrapping a free tendon graft around the phalanx including the new grafted tendon and holding it down to the bone. Strips of the sublimis tendon may be used instead of a free graft.

In order to make as easy as possible the procedure of attaching the tendon graft to the distal phalanx and of constructing new annular ligaments to hold it in its bed when tension is put upon it the author has come to perform the various steps of the operation in a definite order. After the remains of the scarred tendon have been completely excised the graft is laid in place and attached to the free end of the phalanx. A silk suture is attached to the free end of the graft and passed through the proximal portion of the excision of the proximal phalanx and out through the palmar incision. With the graft laid smoothly in the finger and held there by slight tension on its free end the new annular ligaments are constructed. When they are completed it is possible to see tension in the proximal end of the graft. The exact how well they function as ligaments. The sutured under the proper degree of tension the finger is sutured under the proper degree of tension. The next step is closure of the graft is then sutured to the proximal end of the tendon in the palm. The final step is closure of the incision in the palm. After this procedure the finger is put up in a mode of flexion and the wrist is more pronounced.

Ths article is based on a series of cases treated by the author on his hospital services. The patients ranged in age from two to six years. The sex was five males and four females. The average period of hospitalization was eighteen and four days. In five recent cases the average period of physical therapy was ninety-six days. In only one of the cases was no improvement noted. Complete restoration to normal function cannot be expected in such cases, but the effort is worth while if a perfectly stiff finger can be gained. The chief causes of failure are infection, the pulling out of the sutures, and adhesions of the tendons to surrounding tissue and adhesions of the tendons to the joints. The attitude of the patient is

an important factor. It is obvious that a patient who is determined to obtain maximum function will have a much better result than one who desires motion to be minimal in order that he may obtain maximal financial compensation. It has sometimes been observed that results which were not very encouraging when the patient left the surgeon's care become much better with subsequent use of the finger over a period of years.

McCauley J C Jr and Krida A Early Treatment of Equine Congenital Club-foot

The authors stress the importance of adequate correction of equine club-foot and of the treatment with particular reference to the treatment of congenital club-foot should be started as soon as possible. The first correction of the ankle structures as resistance to work against. By gradually stretching the position of the sole line is changed from in extension to adduction and the long axis of the foot from adduction and outward displacement of the forefoot to abduction and forward displacement. When the correction has been obtained the tendon of the Achilles and posterior ankle structures are stretched to correct the equine deformity. Every precaution should be taken to avoid injury to the structures of the foot and particularly to the skin. The number of stretchings required varies from four to sixteen according to the degree of deformity and the resistance of the structures of the foot and should proceed rapidly as possible. A plaster-of-Paris bandage is applied over the plaster of cotton flannel bandage and replaced by the plaster when the angle between the dorsum of the foot and the leg becomes too acute for the plaster of Paris dressing. At this time daily stretchings at home should be instituted.

When clinical correction is made with the foot in a lateral dorsal flexion. In a large percentage of cases it will be found that the correction is maintained in the os calcis and astragalus while the structures remain in equinus. The authors recommend subcutaneous tenotomy and capsulotomy as a routine detail in the treatment of the general anastomosis a subcutaneous achillotomy with division of the posterior lateral and posterior structures performed upward and ligamentous structures of the foot is maintained pressure on the sole of the foot is maintained as far as the procedure as possible along the sole. As much posterior as is permitted by the plaster correct in as is permitted by the plaster maintained preferably with the foot in a neutral position. At the end of a week another stretching without anesthesia is done and the foot again examined with the roentgen ray. The treatment is continued until the foot is then held in the extreme of the

injury distinct from ordinary fractures. As a rule there is a tearing fracture. Only in the semilunar bone are small fragments observed after direct fractures. For diagnosis, roentgenograms from various angles as well as stereoscopic views are necessary. The small fragments rarely heal to the bone, but form pseudo-arthrotic unions.

The article contains a large number of roentgenograms showing the site and type of fragmentation occurring in individual bones.

Clinically the small fragments cause comparatively slight and only transitory distress. More serious and lasting pain, and not rarely permanent disturbances, are caused only by injuries of the semilunar bone and the trapezium. In injuries of these bones prolonged rest is necessary, whereas in injuries of the smaller bones brief rest followed by physical therapy gives satisfactory results.

The authors believe that many of the so-called accessory carpal bones are merely healed pseudo-arthrotic fragments.

E KOENIG (Z)

Schnek, F. The Roentgenological Diagnosis of Fracture of the Scaphoid Bone of the Hand (Zur roentgenologischen Diagnose von Kahnbeinbrüchen der Hand). *Zentralbl f Chir*, 1933, p 1954.

Fracture of the scaphoid bone of the carpus is common. Delay of recognition and non-recognition of this injury are due to faulty clinical examination and improper roentgenological methods. The usual dorso-volar view with the wrist in extension is not satisfactory as in this position the hand is in slight volar flexion. In this position the scaphoid is in a somewhat volar-flexed position, the fracture line, which is usually vertical to the long axis of the bone, is seen in an oblique direction, and even a rather wide fissure may be almost invisible. If the hand is placed on the cassette in the position of a fist, it is somewhat dorsally flexed and ulnar-abducted, the scaphoid bone is visible in its entire extent, and the line of fracture is seen distinctly. For the side view, semi-pronation is often advantageous as the scaphoid bone is thereby brought out on the plate in its entire length and without overlapping shadows of the neighboring bones.

VON TAPPENFEL (Z)

Jepson, P. N. Traumatic Backache. *J Am Med Ass*, 1933, cl, 1778.

The lower part of the back is a shock absorber and the pelvis and lower part of the spine are ruggedly built. According to Chamberlain's method of computation, the male pelvis is normally capable of only from one-half to one-third the mobility of the normal pelvis of the non-pregnant female. However, involvement of the pelvis causes much more discomfort in the male than in the female, and because of his occupation and more frequent exposure to trauma the male is more apt to suffer from traumatic backache than the female.

According to Ryerson, younger patients are more apt to have mechanical instability than older

patients, whereas older patients have an arthritic process which renders the joints more vulnerable to traumatism.

Sprains of the back are very common. The symptoms may develop at once or not until some time after the accident. The usual cause is external violence or stretching due to unnatural strain or stress.

Traumatic back injuries are most frequent in the lumbar spine, next most frequent in the cervical spine, and least frequent in the thoracic spine.

The chief symptom of traumatic backache is pain. As a rule there is a history of a blow, strain, or fall. If the condition is primarily muscular, the pain is intensified when the involved muscle or muscles are strained. When the back is moved in a certain direction the pain is increased and muscle spasm occurs. In most cases standing is very painful. In others, the patient is unable to remain seated for any considerable length of time and any position he assumes is uncomfortable. Often there is discomfort following coughing or sneezing.

In most low backaches caused by traumatism there is, in addition to pain, a definite list away from the affected side with referred pain in the posterior aspect of the thigh on the side opposite the direction toward which the pelvis lists. Back bending is limited in almost all directions, but particularly in a direction away from the side of the pelvic list.

Among the tests devised to determine the site of the low back pain is forcible compression of the sacro-iliac joints, which will often elicit pain in the affected joint.

In the test used by Gaenslen the patient is placed flat on his back with the thigh and knee of one lower extremity fully flexed and held in this position by the patient. The other lower extremity is held fully extended, and pressure is made on the knee.

Another test consists of forcing the leg into flexion, abduction, and outward rotation. This causes pain in the sacro-iliac joint involved.

Roentgen-ray examination in traumatic backache is usually negative unless there is an associated arthritis. In the great majority of cases of back injury, pain or tenderness is present in one or both sides of the lowermost part of the abdomen. This region is supplied by the hypogastric and ilio-inguinal nerves which, in addition to supplying the lower part of the abdomen, send sensory filaments to the buttock.

In the differential diagnosis of traumatic arthritis of the back a fracture or a pre-existing hypertrophic arthritic condition must be ruled out. The treatment must be specific and definite and follow a regular plan.

The prognosis as to recovery is good provided associated abnormal conditions are corrected. Among the latter are foot strain and focal infection.

In the treatment given by the author the patient is placed on a fracture bed or, in home treatment, a suitable modification thereof, and Buck's extension is applied to both legs. If the Buck's extension

ments Haggart urges early reduction followed by proper splinting.

The anasthetic of choice at the Lahey Clinic in the treatment of such fractures in elderly persons is avertin. With the patient lying on the fluoroscopic table traction and countertraction are made and the impaction of the radial fragments is broken up. With the traction maintained the fragments are then moulded into alignment by firm pressure of the operator's thumb passed distally over the dorsum of the patient's wrist. The hand is placed in the position which best maintains the alignment and the normal anatomy of the joint and is held by the operator while an assistant applies a sugar-tong plaster splint. The splint is applied to the elbow, forearm, wrist and hand and bandaged in place with gauze. It is so constructed that it permits complete flexion in all interphalangeal and metacarpophalangeal joints but prevents pronation and supination and provides anteroposterior immobilization of the radius and ulna.

The patient is instructed to use his fingers constantly and abduct the arm over the head at least six times daily. The splint may be adjusted as necessary by cutting the gauze bandage if the swelling increases or tightening it when the swelling recedes. It is left on for from five to seven weeks. If the findings of roentgen ray examination after removal of the splint are satisfactory physical therapy with radiant light massage and active exercises is begun.

PUDOLIN S. REICH, M.D.

Toledos P. S. Subtotal Retrolunar Dislocation of the Carpus. Bilateral Lesions (L. 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100). *C. ug. 1039, 1040, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1049, 1050, 1051, 1052, 1053, 1054, 1055, 1056, 1057, 1058, 1059, 1060, 1061, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1123, 1124, 1125, 1126, 1127, 1128, 1129, 1130, 1131, 1132, 1133, 1134, 1135, 1136, 1137, 1138, 1139, 1140, 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# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

injury distinct from ordinary fractures. As a rule there is a tearing fracture. Only in the semilunar bone are small fragments observed after direct fractures. For diagnosis, roentgenograms from various angles as well as stereoscopic views are necessary. The small fragments rarely heal to the bone, but form pseudo-arthrotic unions.

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The authors believe that many of the so-called accessory carpal bones are merely healed pseudoarthritic fragments.

E KOENIG (Z)

Schnek, F. The Roentgenological Diagnosis of Fracture of the Scaphoid Bone of the Hand (Zur roentgenologischen Diagnose von Kahnbeinbruechen der Hand) *Zentralbl f Chir*, 1933, p 1954

Fracture of the scaphoid bone of the carpus is common. Delay of recognition and non-recognition of this injury are due to faulty clinical examination and improper roentgenological methods. The usual dorso-volar view with the wrist in extension is not satisfactory as in this position the hand is in a volar flexion. In this position the scaphoid is in a somewhat volar-flexed position, the fracture line, which is usually vertical to the long axis of the bone, is seen in an oblique direction, and even a rather wide fissure may be almost invisible. If the hand is placed on the cassette in the position of a fist, it is somewhat dorsally flexed and ulnar-abducted, the scaphoid bone is visible in its entire extent, and the line of fracture is seen distinctly. For the side view, semi-pronation is often advantageous as the scaphoid bone is thereby brought out on the plate in its entire length and without overlapping shadows of the neighboring bones.

VOY TAPPEINER (Z)

Jepson, P. N. Traumatic Backache. *J Am M Ass*, 1933, cl, 1778

The lower part of the back is a shock absorber and the pelvis and lower part of the spine are ruggedly built. According to Chamberlain's method of computation, the male pelvis is normally capable of only from one-half to one-third the mobility of the normal pelvis of the non-pregnant female. However, involvement of the pelvis causes much more discomfort in the male than in the female, and because of his occupation and more frequent exposure to trauma the male is more apt to suffer from traumatic backache than the female.

According to Ryerson, younger patients are more apt to have mechanical instability than older

patients, whereas older patients have an arthritic process which renders the joints more vulnerable to traumatism.

Sprains of the back are very common. The symptoms may develop at once or not until some time after the accident. The usual cause is external violence or stretching due to unnatural strain or stress.

Traumatic back injuries are most frequent in the lumbar spine, next most frequent in the cervical spine, and least frequent in the thoracic spine.

The chief symptom of traumatic backache is pain. As a rule there is a history of a blow, strain, or fall. If the condition is primarily muscular, the pain is intensified when the back is moved in a certain direction. When the back is moved in a certain direction the pain is increased and muscle spasm occurs. In most cases standing is very painful. In others, the patient is unable to remain seated for any considerable length of time and any position he assumes is uncomfortable. Often there is discomfort following coughing or sneezing.

In most low backaches caused by traumatism there is, in addition to pain, a definite list away from the affected side with referred pain in the posterior aspect of the thigh on the side opposite the direction toward which the pelvis lists. Back bending is limited in almost all directions, but particularly in a direction away from the side of the pelvic list. Among the tests devised to determine the site of the low back pain is forcible compression of the sacro-iliac joints, which will often elicit pain in the affected joint.

In the test used by Gaenslen the patient is placed flat on his back with the thigh and knee of one lower extremity fully flexed and held in this position by the patient. The other lower extremity is held fully extended, and pressure is made on the knee.

Another test consists of forcing the leg into flexion, abduction, and outward rotation. This causes pain in the sacro-iliac joint involved. Roentgen-ray examination in traumatic backache is usually negative unless there is an associated arthritis. In the great majority of cases of back injury, pain or tenderness is present in one or both sides of the lowermost part of the abdomen. This region is supplied by the hypogastric and ilio-inguinal nerves which, in addition to supplying the lower part of the abdomen, send sensory filaments to the buttock.

In the differential diagnosis of traumatic arthritis of the back a fracture or a pre-existing hypertrophic arthritic condition must be ruled out. The treatment must be specific and definite and follow a regular plan.

The prognosis as to recovery is good provided associated abnormal conditions are corrected. Among the latter are foot strain and focal infection.

In the treatment given by the author the patient is placed on a fracture bed or, in home treatment, a suitable modification thereof, and Buck's extension is applied to both legs. If the Buck's extension

makes the patient unusually restless the weights are raised for half an hour from time to time. The patient is allowed to turn on his side for a change of position but as a rule is kept on his back in order to obtain the maximum amount of positive support and immobilization. This position is maintained for two weeks. At the end of that time a plaster of Paris cast is applied with hyperextension frame. The modified Goldthwait hyperextension frame. The cast extends from the armpits down to the knee on the side of the referred pain.

By holding the back in hyperextension the maximum amount of immobilization is obtained and the position acquired while the patient is lying in bed is maintained approximately.

After the patient has become accustomed to the cast he is allowed out of bed for a limited time and as he becomes stronger the periods of freedom are gradually increased. The cast is usually kept on for two weeks and in some severe cases for three weeks. At the end of that time it is removed and the back is strapped with adhesive tape. A brace or corset made from measurements previously taken is applied over the strapping. The adhesive tape is left on for four or five days and then re-applied.

Between strappings treatment by baking and light massage is given. At the end of two weeks the adhesive tape is removed and mild exercises are begun. The exercises are gradually increased in severity and scope.

ANTHONY F. SA. A. M.D.

Niedercker K. Traumatic Injury of the Hip  
Occurrence, Treatment and End Results on  
the Basis of Institutional Material During a  
Period of Ten Years (Die traumatische Verletzung  
des Hüftgelenks. Eine Untersuchung über  
ihre Häufigkeit, Behandlung und Ergebnisse  
auf Grund von 933 Fällen). Leipzig, 1933.

This is a report on 102 cases of hip injuries including fractures of the neck of the femur, simple dislocations or central dislocations with fracture of the pelvis or injuries of the soft parts and their sequelae, slipped epiphyses, coxa vara, osteochondritis juvenilis, coxitis and sprains. The youngest patient was four years old (slipped epiphysis) and the oldest eighty-seven years (fractured neck of the femur). Up to the twentieth year of age epiphyseal separation predominated whereas fractures of the neck of the femur and dislocations were less common. Dislocations with the different types of fracture of the pelvis were most frequent between the twentieth and fiftieth years of age. Fractures of the neck of the femur were most common after the fiftieth year (76 males, 26 females). The majority of the females had a fracture of the neck of the femur which occurred at an advanced age and in many instances was caused by a fall. Of the factors responsible for the injury according to the statements of the patients the most common were blows against the hip, trochanter or buttock and falls on these parts. In

the cases of miners they were crushing against a wall or a fall on the hip and buttock from a considerable height with the legs extended crushing by scaffold or earth the blow of a heavy object on the hip, entanglement in a belt gearing the lifting of a heavy load with the hips bent and torsion of the body. For separation of epiphyses a very trifling cause was sometimes sufficient. Dislocations especially central dislocations with severe fractures of the pelvis occurred only under great force.

The majority of the injuries were fractures of the neck of the femur of various types. Only 20 of the 55 patients were brought to the hospital immediately after the accident. The 35 others were admitted from several weeks to several years after the injury. The outward rotation characteristic of fractures of the neck of the femur was especially pronounced in the retrochanteric crush fractures. The old cases showed a high position of the trochanter, a positive Trendelenburg sign, coxa vara, limitation of movement especially of abduction and internal rotation and pseudarthrosis. In impacted fractures without dislocation there were few signs sometimes even after several days.

Röntgen examination on the day of the fracture line information regarding the course of the fracture line and in old cases it shows the type of displacement and in old cases in the head and neck of the femur and in the cases of persons with old injuries in the hip.

In the treatment of the hip the treatment should be the hospital because of pain and difficulty in walking and bearing and locomotion in recent injuries with displacement reduction should be done under anesthesia and a plaster dressing applied. In cases of recent fractures with impaction or no displacement the application of a plaster dressing is necessary. In the cases of old patients with a hip fracture treatment with a brace is indicated. The author treats 2 cases of old injury in which a hip plaster operation by Lexer's method was done in one with removal of a deposit of bone outside the joint and in the other with osteotomy. For cases of polyarthralgia reduction as a mutilating operation. On the other hand he recommends the plastic operation by Lexer's method even for old persons if they are healthy. In the case of patients who come for treatment soon after the accident he uses the Wolff's method. In impacted fractures the impaction should be broken up if the patient is sturdy and dual fracture on an extension table with incorporation of the normal leg as far as the plaster dressing applied on an extension table. In the recent severe cases which were treated early the healing period ranged from five to six months. When treatment regards the recovery of the end result particularly in regard to the recovery of full capacity for work as an entirely satisfactory result the cases of laborers who were injured in accidents of the higher age groups who were awarded compensation. Compensation was not awarded could be discontinued after two years. In hip plastic

operations a favorable end-result cannot be expected until after a period of years and continued after-care. Even patients with pseudarthroses can be rendered fully capable of full work.

Among the cases reviewed there were 17 of dislocation. Just as in the cases of fracture of the neck of the femur, there were cases in this group also which came for treatment several years after the accident. In 1 case thirteen years had passed. Reduction was done under anæsthesia. When the Kocher and lever methods failed, reduction was effected by traction from behind and inward rotation. In cases of suprapubic dislocation it was accomplished by simple traction. The reduction maneuvers used in old cases were the same as those employed in cases of congenital dislocation of the hip. In cases of recent central dislocation extension treatment was given for five weeks and followed by immobilization between sand bags. Walking was not allowed until after six or seven weeks. In cases of dislocation poorly healed several years after the injury, plastic operations for reconstruction of the head of the femur, acetabulum, and acetabular roof were done. Full capacity for work was restored.

There were 13 cases of contusions. Sometimes a picture of serious illness is presented in such cases in spite of negative roentgenograms, and if the symptoms do not soon subside chronic and even tuberculous infectious processes may develop as sequelæ. Operation was performed in 6 cases. Mobilization of the hip joint and subtrochanteric osteotomy were each done twice.

There were 13 cases of slipped epiphysis with consequent traumatic coxa vara. The clinical findings in these cases were rather typical. The roentgen findings depended on whether the injury was recent or old. In 5 cases of already existing coxa vara a subtrochanteric osteotomy was done, and in 1 case a plastic operation on the hip by the Lever method was performed. In 6 cases, non-operative reduction was done under anæsthesia and followed by immobilization in a plaster dressing for seventy-two days. In 10 cases good results were demonstrated by the follow-up examination made after a period of years.

There were 3 cases of osteochondritis juvenilis coxæ. A history of trauma was determined definitely. Two of the cases were recent. The treatment consisted in extension, the application of plaster, and the use of a brace. In the 1 old case the condition was found unchanged at the follow-up examination. In the 2 recent cases permanent satisfactory results were obtained.

Arthritis may develop after any hip injury regardless of the age of the patient, but is more frequent in older than in younger persons. It is most common after rough treatment methods causing injury to the articular cartilage. The constitution does not play the manifold roles in this condition that have been ascribed to it.

The report shows how, even in the most severe hip injuries, complete restoration of function can be obtained when timely expert institutional treatment is given.

A. TRAFNKEI (Z)

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Hua d A Case of Thrombophlebitis of the Arm  
Revealed by Effort Resection of the Throm-  
bosed Segment of the Vein and Denudati n of  
the Artery Cure (Un e de thrombophléb i t d  
n m b s p é r i u r é é l é p u n f r t R é c t i n  
d g m n t v u x t h r m b é e t d é n d a t i n  
t é n e l l e G u é r s o n ) B l l t m m Soc at de  
chr 1933 ix 1405

The patient whose case is reported was a man thirty eight years old who stated that after reaching for a telephone with his left hand he developed weakness in the hand and arm which was followed by increasing swelling. On his admission to the hospital the arm was edematous and purple abduction of the arm was painful the axillary vein was hard and painful and a ray examination showed an increased upper medial shadow.

Twelve days after the patient's admission to the hospital the thrombosed portion of the vein was removed and the artery denuded. Six days later the condition of the arm was much improved but the left side of the head face and neck was edematous and discolored and there was a painful enlargement of the left internal jugular vein. To relieve the congestion and pain venesection was done on the external jugular. Anti syphilitic treatment was given because of a doubtful blood reaction. Clinical improvement was very marked but the arm remained weak and the mediastinal shadow persisted.

The author reports observations on the arterial and venous blood pressure in the two arms and the variations produced in the pressure of the cerebrospinal fluid by Queckenstedt's procedure during the time that there was evidence of the thrombosis of the internal jugular vein on the left side.

In discussing the cause of the thrombosis the author states that the slight trauma seemed scarcely enough to produce the condition but it is equally difficult to ascribe the condition to infection or syphilis.

In the discussion of this report attention was called to the fact that in such cases there may be an increase in the blood platelets with a corresponding increase in the clotting time of the blood.

CADEVAT pointed out that infection within the chest is quite possible in such a case.

MARSH W POOLE M D

Podkaminsky N A Disturbances in the Cardio-vascular System from Arterio-venous Aneurism  
(St ru g e d H g e l e s v i m n o l g e a t e r r o-  
a c u r y s m a ) A h f R u Ch 933  
class 69

Podkaminsky reports the case of a man who developed a large arteriovenous aneurism several years

after a severe injury of the femoral artery. When pressure was applied to the aneurism the blood pressure rose from 118/58 to 145/78 mm Hg and the pulse rate decreased from 96 to 70. The heart was greatly enlarged. Marked dyspnea and edema were present. A murmur was heard over all of the valves.

Three months after operation the heart was considerably reduced in all diameters the patient was able to work and even to go upstairs without much fatigue the edema had disappeared and the murmurs had ceased.

The author discusses the most commonly accepted theories regarding the symptoms associated with compression of an aneurism: (1) the reflex theory (2) the mechanical theory (he cites especially the work of Reeder and Fick) and (3) the mechanical-neurogenic theory according to which the increase in the blood pressure is mechanical and the slowing of the pulse is neurogenic (Gerlach Harke Wachsmuth Kleinschmidt).

According to the author's theory both symptoms are mechanical. A certain amount of blood flows directly into the venous system. As a result there is a decrease of the blood pressure in the arterial system and an increase in the venous system with a distinct venous pulse. An increased amount of blood flows into the right heart under increased pressure. As a result this part of the heart becomes dilated. The minute volume increases. However as the arterial pressure decreases simultaneously the load on the left heart is greatly increased. As a rule the blood pressure remains at a level below the normal. According to Israel this fact is responsible for a decrease in the tone of the arterial walls an increase in the capacity of the circulatory system and a consequent further increase in the demands made upon the heart. The output and the contractions of the heart are increased. Dilatation and hypertrophy result. As the regulation of the pulse is dependent upon the dynamic characteristics of the heart muscle the slowing due to compression is caused by overfilling of the heart. These hydrodynamic phenomena produced by the compression of an aneurism resemble the symptoms which the author has noted in persons who have worked in a bent over position. In such persons there is an increase in the minute volume blood pressure and the transverse diameter of the heart (chiefly in the left ventricle). The phenomena present an analogy also to the findings of experiments on compression of the walls of the abdomen. The author cites the investigations carried out by Frey who found the arterial pressure increased even after severance of both vagus and sympathetic nerves below the diaphragm.

FRANZ (2)

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

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## BLOOD, TRANSFUSION

Kovtunovic, G. The Survival of Blood (Ueber das Ueberleben des Blutes) *Sovel vrač Gaz*, 1933, 1/11, 21

The author believes that the term, "preserved blood" should be dropped altogether and the term, "surviving blood" substituted for it. According to the findings of various investigators, the life of erythrocytes varies from twenty to one hundred and twenty days. As yet, no definite criterion of the viability of these cells has been recognized. We have only a certain indication of their death—hemolysis. Blood which shows hemolysis should not be used. Blood which is kept in biological solutions (physiological salt solution, a solution made from seven parts of sodium chloride, five parts of sodium citrate, two-tenths parts of potassium sulphate, four one-hundredths parts of magnesium sulphate, and distilled water to make up 1,000. This is used in a proportion of 1:2) survives for from six to eight days at a temperature between 15 and 30 degrees. In a 4 per cent solution of glucose with sodium citrate, blood survives at the same temperature for from fifteen to eighteen days. (EPSTEIN Z)

Boycott, A. E., and Oakley, C. L. The Adjustment of the Blood Volume After Transfusion. *J Path & Bacteriol*, 1934, xxxviii, 91

A short review of the literature is first presented. It has been generally believed that after transfusion of blood into animals, the increase in blood volume is soon corrected by the expulsion of plasma from the injected blood and the animal's blood to provide space for the injected corpuscles. In experimental studies the authors found that after the injection of blood equivalent to from 40 to 80 per cent of the existing hemoglobin, the resulting hemoglobin value was not as high as would be expected if the blood volume had returned to normal.

In a subsequent series of experiments carried out by them rabbits were given transfusions of blood amounting to from 50 to 100 per cent of their blood volume. Before the transfusion, the blood volume was estimated from normal standards and the total corpuscles, plasma volume, hemoglobin, plasma protein, and plasma chlorides were determined. One, two, or three days later, the animals' blood was washed out with warm citrate salt solution and the blood volume and the other determinations were repeated. These experiments showed that there was an increase in blood volume equivalent to the number of corpuscles injected. The plasma volume after the transfusion was practically the same as before. The authors therefore concluded that the volume to which the animal adjusts its blood is determined by the plasma volume rather than by such factors as concentration and viscosity. There was no evidence of red cell destruction. An average of 80 per cent of the serum protein injected disappeared from the blood after transfusion. The blood and plasma chlorides acted similarly.

Keusenhoff, W. Accidents in Blood Transfusions (Zwischenfalle bei Bluttransfusionen) *Zentralbl f Chir*, 1933, p 562.

In spite of all precautionary measures, there are occasional cases of injury from blood transfusion in which the complication is not explained satisfactorily by the donor's blood and therefore no certain protection against it is possible. The author reports one such complication which occurred in about 200 transfusions done in the last year and a half. Milder complications, manifested by subacute symptoms, such as chills, fever, and mild, transitory jaundice, have also been seen by the author occasionally, but they are not important.

Recently Keusenhoff saw another severe reaction after a transfusion which was done for an acute, severe intestinal hemorrhage. A compatible donor of the same group (A) was used and 1,000 c cm of blood were transfused with considerable salt solution. Preliminary biological tests were negative. The transfusion of 100 c cm of blood was followed by severe tenesmus, precordial pain, suffocation, and vomiting. The vomitus did not contain blood. A transfusion reaction was suspected, but the symptoms might have been due to the very severe hemorrhage. As the patient was still bleeding profusely and had become unconscious, transfusion was injected and therefore more blood was injected. The manifestations slowly subsided and the patient showed considerable improvement. On the following day jaundice developed and erythrocytes, granular casts, and oxyhemoglobin appeared in the urine. Therefore, although the donor belonged to the same blood group, hemolysis had occurred. Nevertheless the severe hemorrhage stopped and did not re-appear. The icterus faded rapidly, and on the second day after the transfusion the urine became normal. In another group determination, which was made with indirect test-serum examination and the roentgen test (crossed agglutination), Group A was found on both sides. The author suggests that the disturbances may have been due to the transfusion of too much blood or to an agglutination titer of the donor's blood which was too high for the patient who had been jeopardized by the enormous hemorrhage.

Another severe reaction occurred in the case of a sixty-two-year-old man who was seriously ill with chronic pernicious anemia. The hemoglobin was 35 per cent, the erythrocyte count was 1,570,000, recent punctate hemorrhages had occurred on the legs, and the stools contained blood. The blood group was found to be O. After a satisfactory biological test, 1,000 c cm of blood were transfused from a donor of the same group without untoward symptoms. However, in the evening the patient had chills, a temperature of 40.2 degrees C, and clouding of the sensorium. After two days the condition was improved, the hemoglobin content of the blood was 55 per cent, and the erythrocyte count was 2,360,000. The patient was discharged sixteen days after the transfusion. Eight months later he was

HOWARD L. ALT, M.D.



## INTERNATIONAL ABSTRACT OF SURGERY

re admitted because of increasing fatigue. The hemoglobin was then 40 per cent the erythrocyte count was 1 880 000 and the picture presented was that of typical pernicious anemia. After preliminary typing (o) a transfusion from another donor of the same group was given. Seven hundred and fifty cubic centimeters of blood were transfused without reaction. That evening the patient became delirious and had a fever of 40 degrees C but on the following day his mind was entirely clear he was free from fever the urine was negative and the hemoglobin was 65 per cent. Two months after his discharge he was admitted again because of increasing weakness. The hemoglobin was then 30 per cent and the erythrocyte count 1 350 000. A transfusion of 950 c cm from a donor belonging to Group O was given without causing a reaction but at noon the patient had chills and a temperature of 40.2 degree C. On the following day his temperature was normal and the urine negative. Jaundice appeared on the second day but disappeared again after four days. The hemoglobin was 30 per cent and the patient was becoming more exhausted. After ten days another transfusion of 1 000 c cm was made from the same donor. The preliminary test was good and no reaction occurred during the transfusion. No fever at the end of an hour the patient had chills and a temperature of 39.3 degrees C. Later he collapsed with a small pulse and cyanosis. The urine was dark red and contained oxyhemoglobin and granular casts. Death occurred on the following day with

increasing circulatory weakness. Permission for autopsy was refused.

This patient was doubtless a very poor risk. The first two transfusions were followed by some improvement but the third had no beneficial effect. There was certainly no error in the typing. In the third and fourth transfusions the same donor was used and therefore the direct test was not made. Only the hemotest examination and the biological test were done. Perhaps the omission of the direct test may explain the hemolysis. Trauen observed sudden incompatibility of the donor's blood after repeated transfusions from the same donor. This suggested the possibility that the earlier transfusions produced in the recipient immune antibodies against individual and group substances in the donors' blood which were injurious. This injury may be avoided by crossed agglutination. Many advise changing donors in repeated transfusions. I advise the volume of the transfused blood also played a role. Very large blood transfusions are not necessary especially in cases of chronic hemorrhage and diseases of the hematopoietic system. In such cases it is better to give frequent small transfusions. Careful blood group determinations are essential. The direct test should also be carried out as it reveals errors in the indirect examination. With repeated use of the same donor the characteristics of the serum must be determined each time. However it is better to use another donor. The amounts of blood transfused should be small.

ERICH HENDEL (Z)

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

Van Allen, C M, LaField, W A, and Ross, P S  
The Roentgen Diagnosis of Atelectasis, with  
Special Reference to the Ground-Glass Shadow  
and the Degree of Pulmonary Shrinkage  
*Radiology*, 1934, **XXII**, 27

Because of the disagreement with regard to the definition of atelectasis and the absence of pathognomonic signs, the roentgen diagnosis of the condition has not been entirely satisfactory.

Atelectasis is defined as a totally airless state of either a part or all of the lung, with collapse of the small airways and alveoli. This definition applies to the three recognized types of the condition, namely, the congenital, the obstructive, and the compressive.

Recently the term "atelectasis" has been used to include various states in which the pulmonary tissues are partially air-containing, the collapse not being complete, or in which the alveoli are filled with exudate and are not collapsed.

Pneumonia and atelectasis should not be confused although areas of atelectasis may develop in the course of pneumonia when bronchi become plugged by the viscid exudate. Pneumonia is more prone to develop in areas of obstructive atelectasis that are contaminated with pneumococci than in a similar normally aerated lung.

Areas of hypoventilated lung should not be classified as atelectasis as they carry on a definite, though decreased, respiratory exchange, while atelectatic tissues are wholly without external respiration.

The characteristic roentgenographic signs of atelectasis are produced by the reduction in size of the affected tissue. The diaphragm on the affected side is elevated and part or all of the mediastinum is displaced toward the involved side. At times the intercostal spaces on the atelectatic side are narrowed while those on the other side are widened. The spine may show scoliosis with the concavity toward the lesion. During respiration the affected side moves less, and the opposite side more, than normally, as evidenced by the excursions of the ribs and diaphragm. The mediastinum moves toward the side of the lesion on inspiration, and away from it on expiration.

Bilaterally symmetrical atelectasis produces none of the displacements described.

These roentgenological features of atelectasis are quite generally agreed upon, but there is considerable variation in the interpretation of the shadow cast by the pulmonary tissues themselves. The lung shadows have been variously described as homogeneous, mottled, streaked, slightly hazy, and extremely opaque, but no one has made use of these

variations to differentiate the types of atelectasis or to distinguish atelectasis from other conditions producing increased density of the lung.

All of these signs have been found in other pulmonary diseases. Wu found diaphragmatic elevation in 55 per cent and mediastinal displacement in 12 per cent of cases of pneumonia. Manges and Packard point out that fibroid pulmonary tuberculosis produces findings similar to those in obstructive atelectasis.

The authors determined to search for a means of more accurate diagnosis between atelectasis and other lesions causing pulmonary consolidation.

The term "atelectasis" was used to denote complete airlessness and alveolar collapse, massive or focal.

First, roentgenograms of excised dog lungs in which atelectasis had been produced by obstructing a bronchus were made and compared with roentgenograms of the same lungs after they had been artificially reinflated. Next, roentgenograms of fresh atelectatic human lungs of all types obtained at autopsy were made, studied, and checked by histological examination. Then roentgenograms of the chests of living human subjects presenting these lesions, determined by careful clinical observation, were made. The lung shadows of the three groups were studied and compared as to composition.

It was found that the lung shadow was completely homogeneous only when the lung tissue was entirely free from air. Even an extremely small amount of air, detectable only by microscopy, is plainly revealed by roentgenography.

A completely airless lung, consistently gives a homogeneous "ground-glass" shadow if (1) the dosage of X-ray is sufficient to penetrate the tissues and demonstrate their radioconsistency, and (2) the shadow of the lesion is large enough to permit discernment of its consistency.

The other common consolidations of the lung which are confused with atelectasis cast a definitely heterogeneous shadow because of the presence of residual air. While a few other lesions present the ground-glass shadow of complete airlessness, these can usually be distinguished readily by other signs.

The relative sizes of affected lobes is of importance. Measurements by Wang and Van Allen show that a completely atelectatic lobe is very much smaller than normal during both inspiration and expiration. In pneumonia the affected lobe is of about normal size during expiration but much smaller than normal during inspiration. Wu has shown a pneumonic position of the diaphragm on the side of a pneumonic lesion during inspiration but never on expiration, while in atelectasis the diaphragm is high during both phases of respiration.

The ground glass shadow is constant in atelectasis unless shadows of irregular density are superimposed upon it. In massive atelectasis the area of even density is easily seen. In focal atelectasis the areas may be so small as to be obscured, but the characteristic evidences of visceral displacement are constant.

In pneumonia the roentgen shadow of the lung is always heterogeneous because of the presence of air and visceral displacements due to reduction in the size of the lung are absent or limited to the inspiratory phase.

A tuberculous lung also gives a heterogeneous shadow except in caseous areas which are usually small. Small scattered tuberculous lesions may be difficult to differentiate from focal atelectasis especially if visceral displacements occur at both inspiration and expiration as may be the case in fibrous tuberculosis. Under such conditions focal atelectasis can usually be ruled out as it rarely occurs so chronically as tuberculosis. If the lung is compressed by pneumothorax it may be impossible to distinguish focal atelectasis from tuberculosis.

Hæmorrhagic infarcts produce a mottled shadow although they may cause visceral displacements after fibrous shrinkage.

Pulmonary hypoventilation can be distinguished from atelectasis by absence of the ground glass shadow.

An extrapulmonary mass encroaching upon the lung field produces a ground glass shadow unless lung is overlaid by it, but the visceral displacements are usually not characteristic.

When massive atelectasis and another consolidative lesion occur in the same part of a lung the ground glass shadow of the atelectasis obscures the other lesion unless calcified areas or air containing cavities are present.

In neoplasms of the lung associated with obstructive or compressive atelectasis the shadows of the two lesions are indistinguishable. In the obstructive type visceral displacements may be present, but in the compressive type they are absent.

MARY E. MATHER, M.D.

## ANÆSTHESIA

Herb J. C. The Present Status of Ethylene. *J. Am. Med. Ass.* 1933 41: 5.

The author states that undue publicity given the explosive hazard of ethylene is unfortunate as it may deprive patients, surgeons and anesthetists of a most valuable anesthetic agent. The minimum amount of ethylene in air that is inflammable is 3.02 per cent. Tests have shown that explosions can occur only in the dangerous area 1 ft. above the mask and 2 ft. to the side of the exhalation valve. Safety in the use of ethylene may be obtained by removing sources of ignition such as open flames and cauteries. To prevent electrostatic explosion the hospital with which the author is connected has perfected a plan to ground all objects on which a

charge may exist. At first a large sheet of steel was placed on the floor for this purpose. Later the flooring was changed to cloisonné terra-zo with brass strips. All operating room furniture is equipped with several small brass chains long enough to drag on the floor. Since these precautions were taken no indication of explosion has been seen in over 30,000 anesthetics.

The author believes that ethylene possesses distinct advantages over all other anesthetics especially when it is combined with local infiltration in pelvic operations and operations on the upper part of the abdomen.

GEORGE R. McVITT, M.D.

Angeles O. C. and Tzovara S. Considerations on the Mortality in 120,000 Spinal Anesthetics. (*Relevé des mortalités en la moelle de 120,000 rachétiens*). *Pr. Soc. Méd. Par.* 1933 21: 1994.

This article is based on data collected by 22 Roumanian surgeons in 3 university centers and 9 provincial clinics. The authors point out that spinal anesthesia has definite indications and contra-indications. They list the contra-indications as follows: (1) massive hæmorrhage, shock and anemia; (2) heart lesions with poor compensation; (3) hypotension; (4) acute toxæmia (intestinal obstruction with toxæmia and hypotension, uræmia) and (5) septicæmia.

The statistics reviewed include all deaths that have occurred during the time that spinal anesthesia has been used. The number of deaths was greatest in the beginning when the contra-indications were less clearly understood and the technique was not so good as it is today. Exact determination of the mortality of spinal anesthesia is difficult because of the different techniques used by the surgeons in different localities. In 122,467 cases of spinal anesthesia collected by Forgue and Basset in 1928 from all over the world there were 169 deaths.

In the 20,037 cases reviewed by the authors which represent the combined figures of 2 surgeons there were 38 deaths (1 death in each 3,158 cases). In 33 cases the causes of death were as follows: cardiovascular collapse 23 cases, meningitis 5 cases, respiratory failure 4 cases and cystitis 1 case. The time of death in these 33 cases was as follows: at the end of the intraspinal injection 7 cases, during the course of the operation 12 cases, within twenty-four hours 7 cases and after twenty-four hours 7 cases.

The mortality was no higher if it was not lower than that of chloroform anesthesia. In a series of 8,636 spinal anesthetics induced in children from 1 to five years of age which were recently reported by Balacesco there were no deaths.

If the contra-indications are considered carefully in each case and the patient is watched not only during the operation but at least twenty-four hours afterward so that a renal or epinephrine lobeline or carbon dioxide may be administered promptly the mortality can be kept very low, particularly since

less toxic anæsthetic substances have come into common use and ephedrine is given to prevent hypotension  
MARSH W POOLE, M D

Bakay, L Local Anæsthesia in Surgery (Die örtliche Betaubung in der Chirurgie) *Orvosképzés*, 1933, VIII, 586

This is a report of experiences in the induction of 17,000 local anesthesias in the author's clinic

Novocain is the least injurious of the cocaine derivatives Its wide use is based on the fact that Braun began his experiments with this preparation The author has returned to the use of novocain after numerous experiments With regard to the recent constant increase of propaganda for novocain substitutes, the author states that such substitutes should be used only if they possess advantages over novocain in all respects or serve better for some particular purpose Percain has the greatest anæsthetic power with the longest duration It is readily sterilized and is bactericidal On the other hand, it is more toxic and causes more local tissue damage than novocain Pantocain is no more toxic than novocain, is readily sterilized and combined with adrenalin, and causes minimal tissue irritation, but its anæsthetic action is slower, and it increases the tendency to bleed in the field of operation Novocain produces no serious toxic manifestations, and causes only transitory cerebral anæmia, palpitation, and vomiting in the cases in which, for some reason, it enters the circulation Tissue damage is sometimes seen after the use of novocain-adrenalin solutions, but it is superficial and limited chiefly to the margins of the wound In some cases an idiosyncrasy of the patient such as a tendency toward angiospasm must be considered

In the author's material it was found that when local anæsthesia was used the incidence of pulmonary complications was reduced and the pulmonary complications which developed were much less severe With regard to the incidence of throm-

bosis and embolism, it was noted that of 9,829 operations performed between 1915 and 1922, thrombosis occurred in 8 (0.08 per cent) and fatal pulmonary embolism in 2 (0.02 per cent), whereas of 8,688 operations performed between 1923 and 1927 thrombosis occurred in 39 (0.44 per cent) and embolism in 11 (0.12 per cent) During these periods the relative frequency of the use of general and local anæsthesia remained unchanged Fatal embolism occurred most often after hernia operations, all of which were done under local anæsthesia It was next most frequent after extensive operations for varicose veins, all of which were done under general anæsthesia The author agrees with Finsterer that the so called operative shock following laparotomies performed under general anæsthesia never occurs when local anæsthesia is used and therefore a toxic action must be ascribed to the narcosis After prolonged operations, acidosis occurs also after local anæsthesia

Premedication with hypnotics does not decrease the value of local anæsthesia Nevertheless, the author abandoned the use of scopolamine many years ago because it lowers the blood pressure Recently, good results have been obtained with scopolamine-eucodal-ephedrin Basic narcotics, with the exception of pernocton, are also used

A needle devised by the author for splanchnic anæsthesia is described and shown in an illustration, also a needle for infiltration of the abdominal wall Contrary to many surgeons, Bakay has noted no inadequacy of paravertebral anæsthesia However, he states that a certain skill is required for conduction anæsthesia After the abdominal cavity has been opened the pelvic organs are anæsthetized by injecting the solution into the triangle between the left and right common iliac veins In this way the conduction of the presacral nerve and the hypogastric plexus is interrupted

An important advantage of local anæsthesia is more careful handling of the tissues during operation

VON LOBMAIER (Z)

# PHYSICO-CHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Deiling S Ro ntgen Therapy of Inflammatory  
L sions in the Region of the Face (D e Roent  
genth p entzu ndlich Erk anku g a im Be  
r ch d G schts) 933 Lep g D tatio

During the nineteenth century it was generally be-  
lieved that especially large and painful furuncles and  
most fluctuating furuncles of the face as well as of  
other parts of the body should be incised whereas  
the smaller ones should be brought to ripening by  
conservative measures such as the application of  
clay and acetic acid compresses. During the last  
decades however incision has been abandoned espe-  
cially in cases of furuncles of the face and conserva-  
tive treatment (the passive hyperaemia of Bier the  
injection of autogenous blood as recommended by  
Laewen parenteral injections of protein vaccine  
therapy) has been used instead. Also soon after  
their discovery the X rays were employed with suc-  
ces in the treatment of furuncles (Morton 1903  
Fvler 1907) and their application was recognized  
as a useful favorable method a early as 1914  
(Schmidt). This treatment followed by general  
quick softening and rapid subsidence Accord ng to  
Schreuss (1910) irradiation is of great importance  
also in the prevention of recurrences

On the basis of an experience of years Heidenhan  
and Fried in 1914 recommended X ray radiation  
for the treatment of pyogenic infections of all types  
In furuncle of the face one radiation is usually suffi-  
cient to cause central softening of the focus suffi-  
tion and subsidence of the edema. Of fourteen cases  
of furuncle of the face which had not been treated  
previously seven reacted excellently. In seven  
others a good result was distinctly evident. Death  
occurred only in two cases in which an operation had  
been performed previously elsewhere. The minimal  
superficial dose was 10 per cent and the maximal  
thema dose was 25 per cent of the skin ery-  
thema dose e but the authors believe that 20 per cent  
of the skin erythema dose is most dependable  
Emmerich obtained healing of furuncles of the face  
at the latest after three or four days by irradiation  
with one tenth of the skin erythema dose with the  
use of a hard filter. In 1910 Fried recommended  
three times a day He irradiated from one to  
using a filter of 0.5 mm of zinc or copper plus from 1  
to 5 mm of aluminum. He claimed successful results  
in 95.5 per cent of cases of furuncles of the face. A  
successful result consists of subsidence of the pains  
improvement of the general condition and reso p-  
tion or accelerated resolution of the focus of infec-  
tion. These results have been confirmed by many  
roentgenologists (Lukowsky Berndt Kramer Maly

brenner Abbati Leucutia Buzello) Otto has used  
considerably larger doses (150 r with a filter of 3 mm  
Al) with good results. In addition careful nursing  
and protective therapy are necessary as was empha-  
sized especially by Kington and Desjard n have found  
Heidenhain Schueller and Desjard n have found  
early irradiation most successful whereas Schreuss  
believes that the best results are obtained only when  
the treatment is given in the stage of full ripening  
1 e eight days after the beginning of the infection  
Knodack obtained the best results from irradiation  
during the stage of inflammatory infiltration. Light  
and Sosman believe that the 8th day is the most  
favorable time for the treatment

Of twenty nine cases of carbuncle Otto obtained  
good results in twenty seven. In two cases of car-  
buncle of the temple the effect of the treatment ap-  
peared to be unfavorable (large central necroses  
prolongation of sloughing and delay of healing)  
According to Seemann a (1914) with irradiation  
therapy should be made routinely in cases of furun-  
cles esp cally furuncles of the face as long as no un-  
usual circumstance demand immediate operation  
In the Roentgenological Institute of the Surgical  
Clinic of the University of Leipzig radiation with  
hard filtration was given in one or two sittings at  
intervals of from one to six days. The dose was  
usually 30 per cent and occasionally from 40 to 50  
per cent of the skin erythema dose. Twenty six pa-  
tients with mild or severe furuncles of the face were  
treated. In addition to the X ray irradiation and the  
general measures heat was applied by means of the  
S flux lamp and covering with an inelastic or a mild  
rubefacient ichthol salve was used. Under this  
treatment incipient furuncles were always re-  
absorbed the pain was quickly relieved and the  
temperature fell to normal n from twenty four to  
forty eight hours. The radiation had no untoward  
effects. In a large number of cases the healing  
process seemed to be definitely accelerated. While  
recurrences were not prevented the healing  
was brought about quickly by early renewed radia-  
tion. Of twenty six cases rapid complete healing  
resulted in seventeen and a distinctly favorable in  
fluente was apparent in five. In four (one of dia-  
betes) the condition was influenced only slightly.  
One patient with a carbuncle of the upper lip died  
from pyaemia three days after the irradiation.  
The incidence of successful results is given by  
Heidenhain as 97 per cent by Seemann as 100 per  
cent by Lukowsky as 70.6 per cent by Light as 92  
as 84 per cent  
In conclusion the author describes experiments  
ca ried out to study the biological course of heal-  
unde X ray radiation  
ARTHUR H VITZ (Z)

## RADIUM

Holthusen, H. Comparative Researches on the Action of Radium and the Roentgen Rays (Vergleichende Untersuchungen ueber die Wirkung von Roentgen- und Radiumstrahlen) *Strahlentherapie*, 1933, xlv, 273

In a comparison of the action of roentgen and radium rays three variables must be especially considered: the different wave lengths, the duration of the action of the rays, and the spatial distribution of the doses. So long as it was impossible to measure the gamma rays, like the roentgen rays, in r units, the doses of roentgen and radium rays capable of producing the same amount of injury to the cells of ascaris eggs were used as the basis of comparison of erythema production. Scarcely any difference was found in the degree of erythema produced by doses which had shown the same cell-injuring action in the experiments. After it became possible to measure the gamma rays in r units with the aid of a photographic method, comparative experiments could be made on this basis.

While the erythema from roentgen irradiation was more distinct at first, the erythema from the third wave of radium was about 20 per cent more marked. Observations of the epilatory action showed a slight advantage in favor of radium. Experiments on ascaris eggs showed almost equal results with roentgen and radium rays, with a hardly appreciable difference indicating that the effect of radium was the stronger. When roentgen rays were used, an influence on the course of the injury curve from quanta of various sizes could not be established. No difference in the action of quanta of different sizes could be found even when this was investigated in the smallest spaces, in the chromosomes of the cell. The form of the injury pictures remained the same whether the ascaris eggs were treated up to the same degree of injury with beta, roentgen, or gamma rays, whereas a marked difference between

the action of ultraviolet and roentgen rays was noted. The experiment therefore provided no basis for the assumption of a difference in the mode of action of radium and roentgen rays. The action is quantitatively proportional to the number of electrons formed. However, the time of application of the doses is of great importance.

The total doses which lead to erythema when the afflux is from 0.5 to 500 r per minute are reported. Curves for the production of the erythema of epidermitis sicca, the tolerance dose, and the epilation dose are presented. The less the intensity of the irradiation, the larger the dose essential for the production of erythema. Whereas tolerance, erythema, and epilation doses approach one another more and more closely with high intensities, they run far apart with decreasing intensities. The epilation curve is the flattest. Cumulation is greatest in the hair papillæ. A further illustration shows how these curves would meet with Mutcheller's dose in infinity. It is important that the doses producing erythema and connective tissue injury deviate to the same degree as the epilation and erythema doses. This deviation is responsible for the change in the quality of the action of the irradiations with the intensity. What applies to protraction applies fundamentally also to fractioning.

From clinical observations it may be presumed that continuous irradiation with low intensity gives the best therapeutic results. On the other hand, the disadvantage of the non-homogeneous spatial distribution of the dose of radium is of great advantage. It permits the administration of extremely large doses to very small areas. The great advantage of radium lies in the possibility of spatial concentration of the action of the rays and contact irradiation in addition to the possibility of continuous irradiation with low intensity. The determination of the best temporal conditions for influencing the disease focus will yield the best results.

BRAUN (Z)

# CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

## MISCELLANEOUS

**Titel O** The O clopn nt of So Call d Caries in  
Teeth In Dermoid Cysts of the O arl s (U b  
d Enst hu g d r og v anen C n an Z hn o  
D mo dcy l en der O n ) 1st h Z h h h  
1933 xl 299

From his studies the author draws the following conclusions  
1 Defects of the crowns of teeth found in dermoid cysts of the ovaries are not due to true caries but are phenomena of resorption

2 With regard to the genesis of these resorption phenomena there is no difference between a tooth found in a dermoid cyst and a tooth in the mouth under physiological conditions (milk teeth) and pathological conditions (retention) cause the hard substances of the tooth to undergo resorptive softening

3 The theories previously advanced to explain the resorption processes occurring in oral teeth (the so-called inflammatory theory, the foreign body theory and the implantation theory) must be rejected as explanations of the causal genesis of these phenomena. They are insufficient to explain the resorption processes observed in either oral teeth or teeth found in dermoid cysts

4 Whenever a tooth is formed, resorption processes occur when the physiological equilibrium between the mesoblast and the parablast is disturbed unfavorably for the parablast. A possible cause of resorption processes in a tooth containing a dermoid cyst is a dystrophy of the parablast setting up the tissue reactions of the vascular connective tissue which cause disintegration of the hard substances of the tooth

5 According to the findings of histological examination the resorption processes occur before a tooth contained in a dermoid cyst occurs before penetration of the tooth into the lumen of the cyst. Therefore the decalcifying action of the acids present in the cyst contents cannot be the primary cause of the defect. The possibility that decalcification so produced may act secondarily to enlarge a defect already present must be admitted theoretically, but in the case reviewed this action was not observed

HANS O NEUMANN (C)

**Mankin W R and Welh A M** The Chemical Analysis of New Growths Correlated With Their Pathological Examination 1933 p 718

The author determined the sodium potassium chloride and nitrogen content of neoplastic

tissue to see whether an outstandingly high concentration of any one or all of these ions occurred. The pathological nature of the various new growths was carefully determined by both qualitative and quantitative methods. Small pieces of the tumor tissue were embedded and sectioned and the remainder used for chemical analysis. By cutting sections of uniform thickness and then counting from 50 to 100 fields in each section the percentage of tumor tissue could be determined fairly accurately. As the growing neoplasm is accompanied in its growth by various other tissues such as vascular stroma and inflammatory tissue, the non-neoplastic tissue must be considered in the estimation of the amount of tumor tissue. Further difficulties are encountered when it is desired to compare the results of chemical analysis of neoplastic tissue with those of chemical analysis of corresponding normal tissue. The epithelial new growths cause the least difficulty in this respect because they arise from an easily highly specialized tissue. Sarcomata frequently arise from connective tissue.

The second part of the article gives a summary of work done in recent years which indicates that the ions under discussion have a very definite physiological role modifying the properties of the chemical matter of the cell. The colloidal protoplasm of the cell is able to recreate its complex chemical structure and also to change its composition with reference to basic elements such as nitrogen. After reversing the colloidal chemistry of the cell the author states that to a large extent the properties of living tissue depend on the types and concentrations of salts both within and outside of the cell, but at present we cannot know what proportion of salts within and what proportion outside of the whole together with its pathological analysis. It is in the specimen examined. Increased cellularity in general is accompanied by an increased potassium content. A fact substantiating the view that potassium is contained mainly in the cells of the tissue. The more rapidly growing tumors tend to have a higher concentration of potassium than the more slowly growing tumors. Likewise tumor cells show an increased concentration of nitrogen. In the mineral content of individual tumors of different types and of the same type a marked variation is found. In the series of breast tumors the sodium and chloride content are approximately the same in individual cases.

The amounts of chloride, potassium, calcium, sodium and nitrogen and the proportions of tumor cells, fibrous tissue and other types of cells in various kinds of tumors are given in tables and the

pathological findings in 29 cases are summarized  
CLARENCE C. REED, M.D.

Murray, J. A. The Bearing of the Experimental Induction of Cancer on Our Conceptions of Its Nature and Causation *Glasgow M. J.*, 1934, **CXII**, 1

The author has confirmed the work of Jensen which indicates that if the cells of newly transplanted tumor material are disintegrated before their introduction, no growths are produced. This observation supports the theory that parenchyma cells constitute the essential part of a malignant new growth, and that the peculiar properties of the tumor are due to cellular differences between the parenchyma cells and the corresponding normal cells of the body. Whether the growth is a mammary carcinoma, a squamous-cell carcinoma of the skin, or a spindle-cell, a melanotic, or a mast-cell sarcoma, each strain remains distinct in structure, cell form, and rate and habit of growth.

No structural or functional difference has been found which separates malignant new growths definitely from the corresponding normal tissues of the body. The difference is that of behavior which is progressive growth continuing as long as the bearer lives and, as transplantation experiments show, is apparently unlimited. The peculiarities of behavior of new growths and their emancipation from the control which holds the elements of the body together as a fairly harmonious whole may be brought about by the combined action of more than one functional derangement working together to produce effects greatly in excess of the sum of their individual consequences.  
M. HERBERT BARKER, M.D.

### DUCTLESS GLANDS

Kennedy, F. S., and Fisher, J. H. Syphilis of the Pituitary Body *Am. J. Syphilis*, 1934, **XVIII**, 12

The authors report a case of syphilis of the pituitary body discovered in the course of a routine autopsy procedure. The subject was a woman fifty-eight years old who had suffered from acquired syphilis manifested by positive physical and serological findings over a period of years. No clinical evidence of pituitary disease had been noted. Death occurred suddenly, and autopsy was performed three hours later. The surface findings at autopsy consisted of multiple healed cutaneous "tissue paper" scars over both arms and scattered diffusely over the trunk, and palpable right cervical, axillary, and inguinal lymph glands. The aorta showed a syphilitic aortitis. On section of the brain an extensive hæmorrhage was found to have torn completely through the right internal capsule and to have extended into, and filled, the right lateral ventricle with clotted blood. The right thalamus was partially torn across and displaced laterally into the lateral ventricle. The hæmorrhage had torn through the septum lucidum, extending into the left lateral ventricle. The pituitary body was not weighed. It

appeared to be of normal size and contour. Grossly, no abnormalities were noted. There was no distortion of the sella turcica.

Microscopic examination revealed syphilitic aortitis and gummata of the liver and pituitary body. Approximately, one-third of the anterior lobe of the pituitary body was involved by a gummatous process. This consisted of numerous miliary gummata, most of which were conglomerate, forming confluent areas of newly formed tissue. Toward the periphery of the lesion, however, small isolated gummata were observed. The lesions extended to a point near the pars intermedia, but the pars intermedia and posterior lobe were not involved. At one point the gummatous process extended outward almost to the capsule. However, the capsule was intact. The gummata were composed of collections of epithelioid cells with no evidence of caseation. Narrow zones of lymphocytes surrounded most of the gummata. Many quite large, well-formed giant cells were found in the gummatous area. In the involved area nearly all of the acinar tissue had been destroyed and replaced by newly formed tissue which had increased the bulk of the pituitary body little, if any.

As diabetes insipidus is the most common clinical manifestation of syphilis of the pituitary body, a Wassermann test of the blood and spinal fluid should be made in cases of diabetes insipidus. The next most common manifestation is the syndrome of dystrophia adiposa genitalis. Sometimes this has been present with diabetes insipidus. Various other clinical manifestations such as hypophyseal cachexia, special ocular signs, deformity of the sella turcica, hypotonia, symptoms of pituitary tumor, and mental disturbances such as agitated depressions and unstable emotional reactions have been recorded. Syphilis of the pituitary body has frequently been associated with syphilitic lesions of the basal ganglia, spinal cord, and meninges. In congenital cases, infantilism and dwarfism have been observed. There may be an intimate relationship between intranasal chancres and syphilis of the pituitary body.

Thirty-six cases of acquired syphilis of the pituitary body which were confirmed by autopsy and nineteen cases in which the diagnosis was based on clinical findings only are reviewed from the literature. Thirty-four cases of the congenital type were found.

The treponema pallidum has very rarely been demonstrated in the pituitary body in cases of acquired syphilis. In cases of congenital syphilis it has been found there much more frequently. In the case reported by the authors no attempt was made to find it because the tissues were fixed before the syphilitic nature of the condition was recognized. Sections stained for the tubercle bacillus failed to show its presence.

The importance of routine studies of the pituitary body at autopsy in all cases of syphilis is stressed.  
CHARLES BARON, M.D.



## INTERNATIONAL ABSTRACT OF SURGERY

Belogorodskij V. The Clinical Features of the Parathyroid Glands According to von Oppel Material (D K l k de Ep th koerp h n nach dem Material von Oppel) J f Ch r 1933

This article is a short résumé of a quite large number (at least twenty eight) reports of clinical investigations on the physiopathology of the parathyroid glands which were carried out following the lead of von Oppel. The investigations began with measurements of the blood calcium in surgical tuberculosis. Since in most of the cases a fall in the blood calcium was demonstrated von Oppel tried to combat the fall by the subcutaneous implantation of bone. Special control experiments (Schmidt and Obrascov) demonstrated that such implants cause an elevation of the blood calcium and therefore explain the beneficial local and general effect of the Albee operation. Achutin and Andrejev determined that sepsis produces a marked disturbance of the calcium balance and parathyroid function. This observation explains the use of calcium therapy in sepsis. In cases of fracture Gusarov observed regular changes in the blood calcium which resulted in

delay of callus formation in hypoparathyroid and hypocalcemic conditions. Under such conditions injections of bone meal and parathyroid transplants have proved beneficial. In latent spasmodic tetany fully developed tetanic bone implants and parathyroid transplants have been employed with good results by many of von Oppel's pupils. Bone implants (boiled beef bones) may be used with good results also as prophylaxis in cases in which total extirpation of the thyroid is done for carcinoma.

Hypercalcemia shown by von Oppel to be the cause of ankylosing polyarthritis is being combated by him and his pupils by numerous parathyroidectomies. Although the ankylosed joints do not become movable again the beginning stiffening is influenced favorably.

Von Oppel had assumed that parathyroid function is regulated by the adrenal hormone. Recent experiments have convinced him that injections of adrenalin have no definite influence on the normal calcium picture. However a low blood calcium will be regularly raised and an abnormally high blood calcium will be regularly lowered by such injections.

Petrov (Z)

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NOTE—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

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## INTERNATIONAL ABSTRACT OF SURGERY

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## INTERNATIONAL ABSTRACT OF SURGERY

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## OBSIETRICS

### Pregnancy and Its Complications

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JUNE, 1934

# International Abstract of Surgery

*Supplementary to*  
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# INTERNATIONAL ABSTRACT OF SURGERY

JUNE, 1934

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

Gallavresi, L. The Roentgenological Study of Changes in the Temporomandibular Articular Interline (Studio radiologico di alterazioni dell'interlinea articolare temporo-mascellare) *Radiol med*, 1934, 7, 35

The author believes that in the roentgenological study of the temporomandibular region it is best to use both Kochler's position and a sagittal projection through the articular interline. He discusses the technique of these projections, shows them by roentgenograms, and cites clinical cases showing their value in clearing up the diagnosis of obscure lesions of the pharynx, head, and sinuses.

EUGENE T. LEDDY, M.D.

### EYE

Duggan, W. F. Visual Results in Cases of Intra-Ocular Foreign Body, A Study of 270 Cases *Arch. Ophthalm.*, 1933, 7, 768

In 1932 Kiehle stated that of most importance in every case of intra-ocular foreign body are the degree of vision retained and the length of time the foreign body was present in the eye. He said that an estimate of vision six months after the injury is not significant, that light perception or vision of fingers at a few feet is nothing of which to boast, and that the longer the period of time elapsing after removal of the foreign body, the greater the diminution of vision. He concluded that the final estimate of disability should be delayed at least two years, and that the patient should be re-examined periodically.

Duggan reports the visual results in 270 cases of intra-ocular foreign body from the private practice of Arnold Knapp previous to 1920 and the Herman Knapp Memorial Eye Hospital, New York, in the period from January, 1920 to December, 1931, inclusive. One year was taken as the minimum follow-up period of the definitive series, because if two years had been chosen the number of available

cases would have been reduced by 50 per cent. Two hundred and sixty-one of the patients were males. The extreme limits of time during which the foreign body was in the eye before removal were two hours and twenty years. In the discussion the cases are divided into 8 groups as follows:

Group 1. Cases in which the patient was followed up less than one year after the removal of the foreign body. In this group there were 175 cases in which the patient was followed up for from one week to ten and a half months. However, when the foreign body had remained in the eye for more than four months it had probably caused sufficient degeneration to render the true visual results unobtainable. In 16 cases the foreign body had been in the eye for from four months to twenty years. Of these, vision was less than 20/200 in 62.5 per cent, 20/200 in 12.5 per cent, 20/20 in 18 per cent, and unrecorded in 6.3 per cent. In the 159 other cases there were 38 enucleations. Of the remaining 121 cases, vision was lost in 9.1 per cent, less than 20/200 in 23.1 per cent, from 20/200 to 20/50 in 14.9 per cent, from 20/40 to 20/30 in 19 per cent, 20/20 in 19 per cent, and not recorded in 14.9 per cent. The complications included cataract in 18 cases, aphacia in 27, secondary membrane in 5, detachment of the retina in 8, vitreous exudate in 16, siderosis in 1, a scleral wound in 23, and phthisis in 8.

Group 2. Cases in which the patient was followed up for one year or longer after removal of the foreign body. In this group there were 53 cases. In 10 the foreign body was in the eye for more than four months. In 8 of these 10, vision was less than 20/200, in 1 it was 20/70, and in 1 it was not recorded. Complications included cataract in 2, detachment of the retina in 4, vitreous exudate in 1, and siderosis in 6. Of the remaining 43 cases in this group, vision was lost in 2.4 per cent, less than 20/200 in 28.6 per cent, from 20/200 to 20/100 in 0.5 per cent, from 20/70 to 20/50 in 7.1 per cent, 20/40 in 7.1 per cent, 20/30 in 16.7 per cent, and 20/20 in 28.6 per cent. The complications included cataract



marked swelling and inflammation. The limbus is often raised in a red ring around the diseased area. This zone of scleritis and episcleritis may early suggest sclerosing keratitis, but in the latter condition ulceration of the cornea occurs rarely if ever. Mooren's ulcer usually requires from three to six months to cover the cornea. The histological picture is that of a chronic infiltration, chiefly with round cells, of the anterior third or two-thirds of the cornea. The loss of substance usually occurs in the anterior third, and there is replacement by a thin layer of vascular connective tissue except near the advancing border, where the infiltration extends under the epithelium and into the stroma of the previously uninvolved cornea. Granulation tissue is present over the sclera beyond the limbus, and there may be loss of substance in the sclera itself.

The condition has been ascribed to (1) the presence of an infectious agent, (2) a general state of malnutrition, and (3) a trophic disturbance due to disease of the fifth nerve. However, there is no conclusive support for any of these theories. The prognosis has been considered almost hopeless.

The treatments reported have included the use of foreign protein, cod-liver oil, phototherapy, and cauterization. Krassó reported five cases thought to be abortive forms of Mooren's ulcer in which rapid healing occurred under treatment with Bucky's border rays (Grenzstrahlen), but Gifford believes that they were not true cases of Mooren's ulcer.

Attempts to produce hypotony have been rarely reported. Fuchs reported two cases with successful results, one in which a small incision was made in the advancing border and re-opened five times in fourteen days, and another in which peripheral paracentesis was performed fifteen times. In the first case vision of  $5/8$  was obtained, while in the second vision was limited to the counting of fingers. Wibo employed puncture with the actual cautery successfully. In three cases Nechitch obtained successful results by the use of the cautery to produce a fistula. The fistula remained patent fourteen days.

The use of a conjunctival flap has been tried, but has often failed. Kreiker attributes the failures to the use of a too-small flap, retraction of which again exposes the advancing border of the ulcer. He has reported three cases in which the ulcer was successfully treated with a corneal flap from above which was large enough to cover the cornea completely. After two or three months a small opening was made in the conjunctiva over the unaffected cornea. The flap then retracted, exposing all of the unaffected cornea. There was no recurrence. In one case vision was  $1/4$ , but in the two others it was less because of the late stage at which the operation was performed.

Gifford reports three cases in which healing of the ulcer was effected with good visual results. In two, a delimiting keratotomy was done, and in one a conjunctival flap was used. The keratotomy consisted of an incision 4 mm. long, just central to the advancing border. The wound was kept open for ten days.

In the two cases in which this operation was done vision was  $20/50$  and  $20/30$  respectively. In the latter case there was at first a corneal astigmatism of 7 diopters, but this disappeared in two months. In the third case preliminary treatment with trichloroacetic acid and phototherapy seemed to arrest the ulcer for a week, but at the end of that time the lesion became active again. It was then thoroughly touched with trichloroacetic acid and a conjunctival flap covering the ulcer and a good margin beyond, but not covering the entire cornea, was turned down. Vision with astigmatic correction was  $20/40$  after three months. So far, the flap has not been disturbed.

Delimiting keratotomy is a safe procedure and less disfiguring than the use of a flap. If a flap is employed, it should cover the whole cornea or extend well past the advancing border of the corneal ulcer, and should be made adherent to the ulcer by the application of trichloroacetic acid. The effect of delimiting keratotomy seems to be due to the increased nutrition and supply of antibodies resulting from a reduction of tension, and perhaps also to the epithelial barrier formed at the site of incision, an effect which is of value whether the disease is infectious or degenerative. E. S. PLATT, M.D.

Igersheimer, J. The Pathology of Tuberculosis of the Anterior Uvea. *Arch. Ophthalm.*, 1934, 11, 119.

The principal histological proof of tuberculous infection is the presence of the epithelioid tubercle. This occurs most frequently in the uvea. The great difference in reaction to invasion of the tubercle bacillus would be of great importance if it were possible to demonstrate the presence of the bacilli in all tissues. The reaction is of three main types: (1) acute and subacute, (2) chronic and recurrent, and (3) special types.

The acute and subacute reaction occurs in persons under twenty years of age, affecting one eye for weeks or months. The anterior and posterior chambers are usually involved, but not the cornea, choroid, or retina. Epithelioid giant cells and lymphocytes predominate. Hypopyon, caseation, and perforation occur, and tubercle bacilli are frequently found.

The chronic types of reaction occur in adults and involve both eyes. Epithelioid cells are not found regularly, and caseation and perforation are rare. Other tissues of the eye are involved. The tubercle bacilli are seldom found.

The special types are rare. In some cases the necrotic process is widespread, while in others a generalized sclerosing tuberculous large-cell hyperplasia in the eyes, bones, skin, lungs, and lymphatic glands occurs. VIRGIL WESCOTT, M.D.

Walker, C. B. Retinal Detachment. *Am. J. Ophthalm.*, 1934, 17, 1.

Diathermy has come to be one of the most widely used methods of treating retinal detachment although the older Gonn and Lindner-Guist methods

## INTERNATIONAL ABSTRACT OF SURGERY

It has their place and in some cases a combination of methods may be indicated. Micropuncture yields the highest average of successful results with the least labor and trauma and the lowest incidence of unfavorable sequelae than any other method as advocated. Very small stops are necessary on micro pins to keep the pins from going too deep but in the apparatus used by the author it is not necessary for the micropins to be insulated if the sclera is dry. With the use of the author's micropins overdosing does not occur and the sclera receives a small degree of treatment (Larsson effect) which widens the mouth of the outlet and thereby provides better and more prolonged drainage. As overdosing may result when the current must be used to pull out insulated pins especially multiple types. Single non insulated cleanable pins which can be rotated to aid in their removal are to be preferred. The use of the latter prolongs the operative time only very slightly as in an unobstructed area twelve pins can be placed in about a minute.

Iridium hardened platinum is the best metal for detachable micropuncture pins because it can be perfectly cleaned by heating it to redness in the Bunsen flame it gives off no oxides and produces no siderosis if by chance a particle is left in the eye it can be used repeatedly without undergoing deterioration from cleaning or sterilization.

Reports of loss of micropins without threads attached and of the breaking of insulation collars during use are numerous. When the count fails to check and it is uncertain whether the lost pin is in the orbit or on the floor X-ray examination may be necessary. Constantly threaded iridium platinum micropins have been found safe and satisfactory.

WILLIAM A. BLANK JR. M.D.

# Lindner A. The Prevention of Spontaneous Retinal Detachment. *A. A. Ophth.* 93:4:48

Lindner states that the cause of retinal detachment is a retinal tear and this can be proved by mechanical means. A model retina can be constructed by coating the interior of a round glass flask with a layer of celloidin containing enough aluminum powder to render it more visible and somewhat adherent. If an artificial hole with a protruding flap is made in this layer and the flask rotated detachment soon occurs. When the motion of the flask ceases the detachment tends to flatten out. This principle has been utilized in the eye by the use of Lochbrille or hole spectacles which obviate eye movements. In the eye however there is some contraction of the solid vitreous in the neighborhood of the detachment which causes the retina to buckle so that it will not return to the normal position on immobilization. The author believes that in retinal detachment there is a reversed stream of intraocular fluid moving from the choroid back through the retinal hole absorbed by the choroid and eventually causing liquefaction of the vitreous. After this has occurred the use of Lochbrille will cause a definite flattening of the detachment.

The prevention of detachment requires prevention of the retinal tear. Predisposition to detachment occurs in choroiditis myopia and senility. In these conditions there is either detachment of the retina or liquefaction of the vitreous.

In an attempt to prevent the formation of a hole with subsequent retinal detachment the eye may be immobilized by one of the following four methods:

1. Interruption of the nerves of the ocular muscles. This procedure would have a lasting and complete effect but because of complications such as the production of ptosis and paralysis of the sphincter of the pupil and the ciliary muscle it is not advisable.

2. Excision of pieces of the muscle performed in two sittings. This would be slightly less effective and would be objected to by most patients. It might be recommended in certain cases of inoperable monocular detachment.

3. Education and restriction of ocular movements by optical means. This method is simpler and more satisfactory. Glasses with strong peripheral aberration may be prescribed. In myopia of over 10 diopters Iunktal lenses may be prescribed. They should be inserted in the frames with the surface reversed.

4. The use of Lochbrille with the posterior surface of roughened light milk glass containing a central clear area of 4 or 5 mm for the pupil. As these spectacles cut down the peripheral field their use is less desirable than the third method.

Lindner has never performed a prophylactic operation but believes that it may some day be done when the danger of detachment is imminent.

WILLIAM A. BLANK JR. M.D.

# Shapland C. D. Retinal Detachment and Its Treatment by Surgical Methods. *A. Rev. wof* 425 Cases. *B. J. Ophth.* 93:4:1

Of 425 cases of simple retinal detachment seen at the Royal London Ophthalmic Hospital in the period between December 25 1929 and January 7 1933 21 were operated upon by the ignipuncture method of Gonn 79 by the Lindner Gonn multiple thermic method of operation and 72 by the diathermy method of Larsson. In 79 no operative measure was employed. The patients ranged in age from eight to eighty two years. The average age was forty two and eight tenths years. Two hundred and sixty were males. Fifty two and three tenths per cent of the detachments occurred in myopes. Thirty one and one tenth per cent of the detachments occurred in emmetropes and 6.6 per cent of the detachments played a role in 43.9 per cent of those occurring in myopes. One or more holes in the retina were found in 76.2 per cent of the cases. In 90.4 per cent of these they were in front of the equator and 10.38 per cent they were multiple. There were 115 examples of round

holes, 113 cases of disinsertion or anterior retinal dialysis, 105 arrow-head tears, 20 radial slit-like tears, and 10 irregular rents. The temporal half of the globe was the most common site of tears, 79.6 per cent of the tears being in that region.

Of the 221 patients operated upon by the Gonnin method, 27.6 per cent were cured and 10.4 per cent were benefited. Of the cases in which the detachment had been present for less than six weeks, a cure was obtained in 40 per cent, whereas of those in which it had been present longer than six months a cure was obtained in only 10 per cent. In 62.3 per cent of the cases with a successful result, 1 ignition-puncture was sufficient. In 40 per cent, 3 punctures, and in 16 per cent, 4 punctures were necessary. Complications associated with this method included secondary rents, vitreous hemorrhage, traumatic cataract, and transient uveitis. The technique of Gonnin was followed except that after the first six months the galvanocautery was used instead of the Paquelin cautery as the latter was found unreliable.

Of the 79 patients operated on by the Lindner-Gust method of multiple trephining with a 1.5-mm trephine and the use of potassium hydroxide, 25.3 per cent were cured and 15.2 per cent were benefited. In 7 cases completion of the operation was prevented by early perforation of the choroid. Subtraction of these cases and of a few which were operated on by a modified procedure raises the incidence of cure to 31.7 per cent. Complications included secondary rents, vitreous hemorrhage, uveitis, vortex vein thrombosis, and subretinal hemorrhage.

The diathermy method advocated by Larsson includes superficial treatment of the sclera over the affected area and subsequent perforation of the sclera over the tear with the electrode or by means of a trephine opening. Of the 72 cases treated by this method, a cure was obtained in 47.2 per cent and improvement in 13.9 per cent. Except for a few secondary holes, complications were rare. The higher incidence of cure in the cases treated by the Larsson method of diathermy, the ease with which the method can be carried out, and the lower incidence of complications indicate that the Larsson method is the most satisfactory procedure for the treatment of detachment of the retina.

WILLIAM A. MANN, JR., M.D.

Pischel, D. K. Detachment of the Retina, Its Present Operative Treatment. *Am J Ophthalm*, 1933, xvi, 1097.

Pischel discusses various types of operation for retinal detachment and reports the results of the Safar operation on fifteen eyes. He emphasizes the importance of exact localization of the retinal tear.

The Gonnin operation, which aims at direct closure of the retinal tear, requires only a simple armamentarium and is easily and quickly performed, but demands especially accurate localization of the tear. Other disadvantages of this procedure are burning of the retina, extensive scarring and sec-

ondary contracture with the formation of new holes, the sudden egress of subretinal fluid through one large opening, and the difficulty of using the procedure in cases with large holes or multiple tears.

In the Lindner-Gust operation, which aims at walling off the tear, the localization is easier, there is a possibility of including several holes in a single circle of exudate, and thorough drainage by many openings permits the retina to float back into the proper place. The disadvantages of the procedure are the very difficult technique which prolongs the operation, the difficulty of reaching back to the posterior pole, and the possibility of intra-ocular hemorrhage.

The Safar operation, which is also a walling-off procedure, has all of the advantages of the Lindner-Gust operation. In this procedure the retina is kept away from the choroid throughout the operation by unescaped subretinal fluid, being thus well protected from trauma, there is no possibility of intra-ocular hemorrhage as the vessels are thrombosed, and all parts of the eyeball are readily reached.

The Larsson operation requires no localization beyond a rough estimate and permits treatment of detachments in which no hole is found. The technique is simple. The disadvantages of the procedure are the single trephine hole for drainage, extensive destruction of the choroid and retina, extensive treatment of the sclera, and the uncertain trans-scleral dosage.

The cases reported included eight with an extremely unfavorable prognosis. In one of the latter the result was favorable, but in others the treatment failed. Of the seven favorable cases operated upon by the Safar method, a cure resulted in four. In a fifth the operation caused re-attachment of the separation retina, but a new separation occurred in another part of the eye. Exact localization was accomplished with the aid of the perimeter. Following the operation both eyes were bandaged for from eight to ten days, and after removal of the bandage stenopeic spectacles were worn for about three months.

WILLIAM A. MANN, JR., M.D.

Caeiro, J. A., Maibran, J., and Balza, J. The Treatment of Retinitis Pigmentosa by Resection of the Cervicothoracic Sympathetic (Tratamiento de la retinitis pigmentaria por la resección del simpático cervico-torácico). *Rev. Asoc. med. argent.*, 1933, xlii, 3403.

The authors report five advanced cases of retinitis pigmentosa which they treated by extirpation of the middle and intermediate cervical ganglia and the stellate ganglion and resection of the vertebral nerve. The first to resect the cervical sympathetic in retinitis pigmentosa was Royle. The only other similar attempts in this direction known to the authors are those of Meighan (one case) and Campbell. Royle resected the sympathetic trunk at the level of the second cervical ganglion in five cases. Meighan extirpated the superior and middle ganglia. Both surgeons reported striking improvement in the

acuity of vision and enlargement of the visual fields. The authors regard sympathectomy of the internal carotid plexus as dangerous because of the resulting wide gaping of the palpebral fissure and the permanent marked mydriasis. They believe that their method gives the best clinical results by suppressing (probably) all of the unilateral sympathetic innervation of the eye.

The general effects were limited to precordial pain and slight fleeting pains radiating to the shoulder and arm. The ocular changes were those of Horner's syndrome. In two cases ptosis appeared only after from ten to twelve hours. Myosis always occurred immediately. Conjunctival injection reached its maximum within twenty-four hours and was accompanied by a sensation of intense heat and sometimes of pulsation of the eyeball which continued for five or six days and then gradually decreased. Enophthalmos and hypotension of the lateral muscles were variable. Acuity of central vision was increased in all cases in some considerably. Enlargement of the visual fields occurred in all cases but was slight. The fields never remotely approaching normal. The appearance of the fundus and night blindness were unchanged. The authors state that it would be illogical to expect better results as these first tentative operations were limited to advanced cases. The effect of the operation is probably limited to improvement of the ocular circulation. Although the vascular theory of the pathogenesis of retinitis pigmentosa is no longer generally accepted, any procedure which favorably influences the choroidal circulation deserves consideration. The authors believe that their results are encouraging and they hope to try the method on patients in earlier stages. They report the results in detail.

M. E. Morse, M.D.

**Barkun, H.** Bilateral Glioma Treated by Radium. *J. Ch. Ophth.* 1934, 20.

Irradiation with radium or the roentgen rays has become a well established procedure in only a few eye conditions. Among these are epibulbar carcinoma, sarcoma of the lid, nevus and intraocular tumor (with glioma involving both eyes).

The author discusses the indications for (1) enucleation with subsequent irradiation of the orbital contents and (2) direct irradiation of an intraocular tumor without enucleation.

He states that when only one eye is involved and the other has useful vision, enucleation of the affected eye is advisable, whereas in cases of bilateral tumor and those of tumor involving the only useful eye irradiation is best. In the latter irradiation is associated with much greater danger to life than enucleation but enucleation of the only useful eye will result in permanent blindness. Other cases in this category are those of sarcoma of the choroid in the only useful eye and the rare cases of metastatic carcinoma of the choroid.

The author reviews the cases reported in the literature in which radium was applied externally and

in use in which it was inserted as close to the tumor as possible. He then reports a case of bilateral glioma in which on September 13, 1932, two 3 mgm needles were placed within Tenon's capsule as far back and as near the growth as possible after the right globe which was completely filled with the tumor mass had been enucleated. The dosage amounted to somewhat less than 400 mgm hrs at 1 cm. On December 28, treatment amounting to about 2500 mgm hrs at 1 cm was given. On April 16, 1933, there appeared to be a detachment with no solid mass beneath it. The fundus picture at this time suggested that further treatment by the first method and possibly also by a combination of this method and cross fire application of roentgen rays was feasible. On September 15, there seemed to be considerable improvement. On November 9, the left eye was enucleated and on examination showed extensive retinal detachment, fresh tumor masses and slightly increased tension. Treatment was then discontinued as it was believed that the processes of destruction had reached their maximum and processes of repair of great importance in checking the general metastasis and walling off any remaining tumor cells were still taking place.

LESLIE L. McCOW, M.D.

**Coleman, C. C. and Hill, E.** Cyst of the Optic Nerves and Chiasm Associated with an Epithelioma of Rathke's Pouch. *J. Ch. Ophth.* 1934, 2, 4.

In treating a case of cyst of the optic nerves and chiasm associated with an epithelioma of Rathke's pouch the authors came to the conclusion that they were dealing with two separate cystic tumors due to early embryonic displacement of tissue belonging to Rathke's pouch. The growth behind the chiasm was long without doubt to be the craniopharyngioma originating in this pouch. The two tumors had no connection.

In explaining the cystic growth of the optic nerves and chiasm the authors state that in early embryonic life the fetal cleft is open below. The optic stalks have not yet closed in to become solid cords. Normally the central retinal vessels enter through this cleft to become incorporated in the optic nerve. Interference with proper closure of the fetal cleft leads to coloboma. In view of these facts the authors believe it is possible that abnormally placed tissue may become incorporated within the nerves and chiasm if it has come into contact with the open optic stalk in early embryonic life and that as a result a new growth may develop and a cyst capsule with an epidermal lining may be formed. This hypothesis is in agreement with the well known theory that tumors are caused by the multiplication of embryonic cells which become displaced during fetal life. In this connection Cushing, speaking of the craniopharyngioma, says: "Under this apertum are included those lesions which on the Cohnheim basis arise from some cell in position (anlage) in early embryonic life." **LESLIE L. McCOW, M.D.**

## MOUTH

Pfahler, G E, and Vastine, J H Irradiation Therapy in Cancer of the Mouth Technique and Results *Radiology*, 1934, **xxii**, 15

Pfahler and Vastine state that cancer of the mouth is curable in the great majority of cases if it is treated early, thoroughly, and skillfully from the beginning by irradiation. At the present time, however, recovery results in only from 25 to 35 per cent of cases.

No one technique is applicable to all cases. Each case must be dealt with individually. However, the principles of the technique can be fairly well standardized. These are based primarily on the principles of irradiation therapy. Bergome and Tribondeau found that cells are most radiosensitive during mitosis, and Dominici found that they are more radiosensitive the more closely they approach the embryonic type. Regaud and Lacassagne noted a greater differentiation in the sensitivity of the cancer cells to rays of shorter length such as the highly filtered gamma rays of radium.

The authors describe their methods of irradiating various lesions, which consist chiefly of surface irradiation.

Of the total number of cases treated by them since 1920, recovery resulted in 29.3 per cent, and of the 171 cases treated by the technique they use today, recovery resulted in 39.2 per cent.

JAMES BARRETT BROWN, M D

Kennedy, R H Epithelioma of the Lip, with Particular Reference to Lymph-Node Metastases *Ann Surg*, 1934, **xciv**, 81

Kennedy reports on 246 cases of carcinoma of the lip in which the initial treatment was exclusively surgical. No opinion is offered with regard to the value of irradiation treatment of the lip lesion, but the importance of thorough removal of the cervical glands is emphasized.

The duration of the lesion averaged over nine months, and two-thirds of the patients had extensive lesions at the time they were admitted to the hospital.

Palpable cervical lymph nodes were present in 60 per cent of the cases, and 33 per cent of them proved to be metastases.

Metastases were found in 14 per cent of the patients in whom no cervical lymph nodes could be felt.

In cases with metastases the average age is somewhat greater and the duration of the lesion somewhat longer, but brief duration and small size of the lesion does not assure safety from metastasis.

The grade of the lesion does not appear to influence metastasis.

In the cases reviewed, 244 neck dissections were performed with a hospital mortality of 11.4 per cent.

Of 147 patients traced, 67 per cent are alive and well. Sixty are well after more than three years and 31 after more than five years.

Of 32 patients with metastases who have been traced, 34 per cent are alive and well. Seven have been well for more than three years.

JAMES BARRETT BROWN, M D

Pierce, G W, and O'Connor, G B A New Method of Reconstruction of the Lip *Arch Surg*, 1934, **xcviii**, 317

In the literature the authors have found the descriptions of sixty-five methods of lip reconstruction. Following a review of the anatomy and physiology of the mouth, they give the reasons for dissatisfaction with some of the older methods. The earliest procedures failed because they did not provide an epithelial lining for the lip. Many reconstructions result in a short, tight lip, and in most procedures muscular action and innervation are disregarded. Flaps which do not conform to the best lines of tension as shown by Langer produce added deformity.

The description of the authors' method is supplemented by four drawings and eight photographs. The principle of the operation is the use of an ascending flap of skin and subcutaneous tissue raised from each nasolabial groove. The supply of tissue is sufficient, the scarring is minimal, the tissue matches well, and there is no interference with normal innervation. One flap is brought down and reversed to form a lining, and the opposing flap is brought down to form the outer surface. Small flaps of mucous membrane are taken from the lateral borders to help form the angles of the mouth and the vermilion border. The bases of the pedicles are returned in two weeks, and a final retouching is done after two or three months.

This method is applicable to the upper or lower lip. The restoration of sphincter action by the bridging of the divided ends of the orbicularis oris muscle is shown in the photographs.

The article has a comprehensive bibliography.

THOMAS W STEVENSON, JR, M D

Esser, Y F S Arterial Supply of Upper Lip Plastic *Ann Surg*, 1934, **xcv**, 101

Esser applies the name "biological flaps" or "artery flaps" to flaps with pedicles which consist of little more than the artery with the accompanying veins, nerves, and lymphatics supplying a given area. The flaps resemble leaves supported by a thin stalk. The thin pedicle is less subject to vascular obstruction due to angulation or torsion than a pedicle containing a broad band of skin, and does not require sectioning and replacement later. The flaps carry such a rich blood supply that they survive on an indolent base such as an X-ray burn.

Artery flaps are most useful on the face where the temporal, occipital, frontal, angular, facial, and supra-orbital arteries may be employed. Before the operative area is sterilized the course of the artery is determined by careful palpation. The course of the vessel and the outline of the flap are then marked out with tincture of iodine. A single incision is made over the artery and carried laterally around it so



that a coating of tissue is left for protection. The diameter of the cross section of the pedicle may vary from that of a match to that of a pencil. A cut must be made also from the defect to the pedicle in order to prepare a new subcutaneous bed for the pedicle. The defect produced by the formation of the graft is closed by suture if possible or by a Thiersch graft. The author cautions against pressure dressings especially on the turning point of the pedicle. He often simply dusts the wound with calomel.

The available arteries on the head and a number of flaps of varying size and position are shown by drawings. In restoration of the upper lip the main temporal artery, its anterior branch or the angular artery is used as a rule. Because of its hairy surface the main artery can be employed only in the cases of men. Photographs of three patients with reconstruction of the upper lip are shown. In the case of one of these patients nasal restoration was also necessary and was accomplished by the author's method of cheek rotation.

Esser has found the described method useful in cases of hare lip in which a previous repair has left a tight upper lip with entropion. The article contains the photographs of two patients treated for this condition.

THOMAS W. STEVENSON, JR. M.D.

### NECK

McGibbon J. E. G. and Mather J. H. Vallicular Dysphagia. *Brit. M. J.* 1933 ii 1013

The authors report on a group of cases of vallicular dysphagia. The dysphagia is caused by masticated food which hits the valliculae and forces the epiglottis back against the posterior wall of the pharynx. Direct or indirect examination of the pharynx, larynx and oesophagus reveals no abnormality but roentgenological examination discloses a delay in the passage of the opaque medium in the lower pharynx. The valliculae are two fossae situated in the anterior aspect of the pharynx between the pharyngeal portion of the tongue and the epiglottis. The fossae are separated from each other by the glossoepiglottic fold. The floors of the valliculae lie immediately above and behind the hyoid bone at the level of the third cervical vertebra.

A diagnosis of primary vallicular dysphagia is made in cases in which no pathological lesion is noted on direct or indirect examination. During and after swallowing there is discomfort referable to the hyoid bone. In some cases the discomfort is intermittent and persists for some time after the ingestion of food. In one of fourteen cases it had been noted for two weeks and in another for two years. In some cases the onset is insidious while in others it is sudden and without known cause.

A diagnosis of secondary vallicular dysphagia is made in cases presenting the same symptoms as the primary type but in which examination reveals a lesion in the referable organs in swallowing or in the pharynx or oesophagus. Among the primary condition resulting in secondary vallicular dysphagia

are bulbar paralysis, bilateral paralysis of the recurrent nerve due to a mediastinal tumor, paralysis of the vagus due to tuberculous infection or invasion of the upper end of the oesophagus by carcinoma, diphenylic paralysis and local lesions such as carcinoma of the oesophagus, pharyngeal pouch and postcricoid carcinoma.

The diagnosis is made by correlation of the findings of direct and indirect physical examination and roentgen examination of the pharynx.

In thirteen of the authors' fourteen cases of the primary form the treatment consisted of explanation and reassurance. One patient could not be traced. The authors suggest that the free border of the epiglottis might be removed if the condition persists. In the secondary type the primary cause must be treated.

MANUEL E. LICHTENSTEIN, M.D.

Friedgood H. B. Experimental Exophthalmos and Hyperthyroidism in Guinea Pigs. *Clinical Course and Pathology*. B. H. Johns Hopkins. Baltimore 1934. 48

Simultaneous studies of the basal metabolic rate and the thyroid gland were carried out on thirty guinea pigs given daily intraperitoneal injections of extract of the anterior lobe of the pituitary gland over a period ranging from forty-eight hours to one hundred and ninety days. Six guinea pigs were used as controls.

The basal metabolic rate showed three distinct periodic variations. In the first period there was a prompt marked increase which began sometimes within from twenty-four to forty-eight hours and reached its highest value (from 6 to 60 per cent) between the seventh and fourteenth day of the treatment. The maximum value and the rapidity with which it was reached seemed to depend only in part on the quantity of the daily dose of the extract as in individual case the response could be sharply curtailed from the very beginning. During the first period the basal pulse rate increased approximately 30 per cent and the basal weight decreased to a point from 6 to 27 per cent below the normal level.

The second period was characterized by a striking refractory state or remission which usually developed when the peak of oxygen consumption had been reached. This phenomenon was certainly not due to a progressive decrease in potency of the extract because previously untreated guinea pigs responded to the extract characteristically. During the remission the basal metabolic rate returned to normal with varying degrees of rapidity, reaching its original value within from one to three weeks.

When the remission was fully established the basal metabolism showed a slight transient increase or fell below its normal level. Such a decrease suggests that prolonged stimulation may lead to impairment of the normal functional level of the thyroid gland with the development of hypothyroidism.

The third period was characterized by a recrudescence of the disturbance in oxygen consumption with another elevation of the basal metabolic rate.

During the first twenty-four to forty-eight hours the cells of the acini in the center of the gland were hypertrophied (cuboidal) and the vascularity of the gland increased appreciably. The normal colloid of the central acini began to lose its firmness and its tendency to stain deeply. It became rather fluid and partially disappeared from the acinus. These changes may account for its "vacuolization" after fixation and staining. Cellular hyperplasia occurred coincidentally with hypertrophy and could be detected by counting not only the mitoses but also the increased number of cells around an acinus. Groups of closely packed intracinar epithelial cells which appeared to be "huddling" from hyperplastic acini were also prominent, and there was a significant increase in the number of acini to a high-power field coincident with an absolute decrease in their diameters. When the stimulation was continued these changes spread further toward the periphery of the gland. The advanced hypertrophy and hyperplasia finally resulted in irregularly shaped acini with lumina partially or totally obliterated by invaginations of the lining epithelium. Just before this stage was reached, the vascularity of the gland was at its maximum.

The individual hypertrophic cells presented many minute vacuoles scattered throughout their cytoplasm, and their inner apices were filled with closely packed fine granules.

The rapidity with which all of these morphological changes appeared and the intensity with which they developed seemed to run somewhat parallel with the quantity of extract administered daily.

During the first week or ten days there was a definite correlation between the progressive changes in the histopathological structure of the thyroid gland and the increasing basal metabolic rate.

Eventually, in spite of the uninterrupted administration of the extract of the anterior lobe of the pituitary gland, the thyroid became histologically comparable in most respects to the thyroid of the control animals.

Preliminary experiments on several animals in a refractory state offered the opportunity to study the ability of these animals to respond to further injections of extract of the anterior lobe of the pituitary gland after discontinuance of the injections for a varying number of days.

These studies indicated that, once an animal has entered upon the refractory period, its thyroid gland may be unable to respond characteristically to further stimulation with the extract.

In the weight curves following the administration of extract of the anterior lobe of the pituitary gland individual variations were noted. Some of the animals lost weight quickly as the basal metabolism increased and died without having shown the slightest resistance to the effects of the extract, while others reacted less violently to the injections. As a general rule the initial loss of weight was abrupt, varied between 6 and 27 per cent of the original body weight, and reached its lowest level after from six to twelve

days of treatment. There was no constant quantitative correlation between the increasing rate of basal oxygen consumption and the percentage of weight loss. The anorexia of varying degree which the animals obviously developed at the beginning of treatment may have been partially responsible for this discrepancy.

Immediately after the initial weight loss there was a period of recovery during which the weight remained fairly stationary at its new level or returned to its original value or regained a considerable fraction of the latter. Animals surviving for several months tended to regain all of the weight that they lost unless their basal metabolic rate became increased again.

Of the thirty animals injected, nine developed exophthalmos and widening of the palpebral fissures due particularly to retraction of the upper eyelid. In several, slight prominence of the eyes occurred toward the tenth day of the experimental period when the most marked hypertrophic and hyperplastic changes were usually developing in the thyroid gland and the basal metabolic was approaching its highest level. The exophthalmos was much more marked when it developed after the animal had entered the refractory period. Striking exophthalmos was seen only in animals which were injected over a period of several months, especially those which finally had an abnormally low basal metabolic rate.

These experiments indicate that the exophthalmos is produced independently of the thyroid secretion which causes the elevation of the basal metabolic rate. They suggest also that extract of the anterior lobe of the pituitary gland is more capable of inducing exophthalmos when the animal is not under the influence of hyperthyroidism but is in a hypothyroid state.

In the first week there was a decrease in activity with a simultaneous diminution of appetite. Thereafter, the animals become very excitable.

Soon after the basal metabolic rate began to increase the guinea pigs began to shed hair and their normally smooth, glossy fur became shaggy and unkempt. This process which was most marked at the height of the increase in oxygen consumption was probably due to thyrotoxicosis and it receded during the refractory phase.

The cycle of events which extract of the anterior lobe of the pituitary gland stimulates in the thyroid of the guinea pig is remarkably similar to that recorded by Marne and Lenhart and by Wilson for the thyroid in cases of exophthalmic goiter in man.

The clinical course of the basal metabolic rate in exophthalmic goiter is also similar to that of the experimental syndrome in guinea pigs. Both conditions are characterized by a progressive intensification of the metabolic disturbance until a peak or crisis is reached, after which there is a period of sustained activity which ultimately subsides spontaneously over a variable length of time.

The relation of exophthalmos to postoperative myxoedema in human exophthalmic goiter and to

experimental hypothyroidism in guinea pigs following thyroidectomy or long continued injections of extract of the anterior lobe of the pituitary gland indicates that the primary cause of exophthalmos in the ophthalmic goiter and injections of extract of the anterior lobe of the pituitary gland are both capable of producing exophthalmos independently of the calcitogenic hormone of the thyroid gland.

In conclusion the author says that although this study disclosed a remarkable similarity between exophthalmic goiter in man and the experimental syndrome in animals it is obviously hazardous in the present state of our knowledge to conclude that the pathogenesis of the two conditions is identical.

NORMAN C. BULLOCK, M.D.

Torin, D. I. Tuberculosis of the larynx. *Arch. Otolaryngol.* 934, 1935.

Torin states that a laryngological examination should be made in every case of pulmonary tuberculosis as tuberculosis of the larynx is a common complication of tuberculosis of the lungs. For successful treatment of laryngeal tuberculosis early diagnosis is necessary. In the majority of cases the diagnosis can be made by indirect laryngoscopy. In cases of chronic laryngitis which does not respond

to the removal of sinus infection or rest of the voice a careful search for a pulmonary focus should be made. Disease of the larynx superimposed on severe pulmonary tuberculosis should be regarded as tuberculous until it is proved to be of some other character. Tuberculosis of the larynx may heal while tuberculosis of the lung advances but healing of pulmonary tuberculosis while tuberculosis of the larynx advances is rare.

Patients with tuberculosis of the larynx are best treated in a sanatorium for tuberculosis where they are under constant supervision and observation. In early cases of laryngeal tuberculosis improvement may be brought about by rest alone. In cases in which infiltration and ulceration are present the use of the actual electric cautery will relieve the symptoms and sometimes effect a cure. In advanced cases in which the patient's condition is very grave and the least attempt at swallowing causes excruciating pain in the throat and ears injection of alcohol into the superior laryngeal nerve is indicated. Surgical intervention is seldom advisable as the cases are rare in which the pulmonary condition associated with very extensive laryngeal disease warrants such heroic treatment.

ELLA M. SALMOSEY

## SPINAL CORD AND ITS COVERINGS

Eloesser, L. Meningopleural Fistula Following Extirpation of a Ganglioneuroma of the Upper Mediastinum, Ganglioneuroma of the Adrenal Gland *Surg Clin North Am*, 1933, VII, 1325

Ganglioneuromata of the upper mediastinum are comparatively rare. In cases of tumor of the posterior mediastinum, especially those of globular tumors likely to be ganglioneuromata, the possibility of an hour-glass extension into the spinal canal should be borne in mind. Extradural tumors of the cord may also extend into the mediastinum. In cases of tumor of the posterior mediastinum segmentary disturbances of innervation should be looked for, and in cases of tumor of the dorsal cord lateral as well as anteroposterior roentgenograms of the chest should be made. Mediastinal tumors causing cord compression should be attacked first through a laminectomy opening, but preparation should be made for rib resection and opening of the pleura. On account of the danger attending leakage of spinal fluid into the pleural cavity, it may be best to operate in two stages, removing the intraspinal portion of the growth first.

The author reports a case of spherical tumor of the posterior left mediastinum in a child. The neoplasm was removed by posterior mediastinotomy, during which the pleura was opened. Following the operation a cerebrospinal pleural effusion developed. Siphon drainage of the effusion was followed by meningitis. Finally the drainage stopped spontaneously and the child recovered completely.

Sympatheticoblastomata arising from the adrenals constitute a considerable percentage of malignant neoplasms occurring in early childhood and infancy. Three types are distinguished: (1) neuroblastomata, with the least differentiation from the primitive neuroblastic cell, which are malignant metastasizing growths usually occurring in infancy, (2) ganglioneuromata, which contain differentiated ganglion cells and irregular strands of nerve fibrils and, often attain a considerable size without tending to metastasize, and (3) paragangliomata, small pigmented chromaffin non-malignant nodules in the adrenal. Non-malignant adrenal ganglioneuromata develop retroperitoneally and displace the viscera anteriorly. They are well encapsulated and rather firm, and have the characteristic pearly luster of a neuromatous growth. On account of their intimate connection with the great vessels, they may be difficult to remove. The author reports a case of adrenal ganglioneuroma. DAVID J. IMPASTATO, M.D.

## PERIPHERAL NERVES

Zotterman, Y. Studies in the Peripheral Nervous Mechanism of Pain. *Acta med Scand*, 1933, LXXX, 185

This article deals with the peripheral mechanism mediating painful sensation. The author's experiments extended from 1927 to 1933. During the first

two years the apparatus was not sufficiently sensitive to show the action potentials caused by burning pain produced by heat, water, or light applied to the cat's paw or to the frog. This result, obtained without mechanical deformation of the skin, did not confirm the work reported by Adrian in 1927 in which the effect of the noxious stimulus (needle) was possibly complicated by the other cutaneous effects. In 1932 the author verified Adrian's finding (1931) that acetic acid applied to the skin of the frog produces small action potentials with a velocity of  $18\frac{1}{2}$  m p s. Other noxious stimuli caused smaller potentials with a velocity of  $5\frac{1}{2}$  m p s. It was found also that heat gave the same effect, that is, small action potentials of slow rates. However, these findings were not obtained in mammals, and the conclusion was drawn that, if present in mammals, they must be too small for present-day methods of recording.

Pressure-cuff experiments on the human arm were conducted to investigate the sensation of tingling which the author associated with prick-sensation.

In 9 subjects cuff-compression of from four to seven minutes was required to produce tingling. The tingling always started in from one half to one and one-half minutes after release of the compression. As the period of compression was prolonged, the tingling began earlier following release of the compression and lasted longer. It was always strongest distally and spread centripetally, thus following the progression of the loss of sensibility.

Cutaneous stimulation with hairs and an algometer during cuff-compression showed that after twenty minutes of compression a hair stimulus ten times that required normally (before compression) was necessary for stimulation. A pricking sensation was associated with this greater stimulation. In the uncompressed arm it was obtained faintly, along with the sensation of touch and pressure. This painful sensation was delayed, and the delay was equal in the compressed and uncompressed arm. The algic threshold remained constant or slightly lowered (from 10 to 20 per cent) with compression. Touch and pressure fibers were not all blocked by compression at the same time, anaesthesia was progressive and differential.

The delay in response to pricking (weighted needle) under cuff compression was investigated. The reaction time was shown to be delayed after about twenty minutes of compression. Two or three minutes more of continued compression caused further delay, and longer compression quickly obliterated the prick sensation.

The observation of Lewis, Pickering, and Rothschild that the higher the cuff on the arm the quicker the anaesthesia was confirmed. It was found also that local pressure over a nerve which did not affect the blood supply to the arm produced the same type of paresis and anaesthesia which was progressive centripetally.

Experiments carried out in 1929 showed that the distal portion of the nerve is more resistant to lack of oxygen than the more proximal portion.

# INTERNATIONAL ABSTRACT OF SURGERY

operation Spontaneous cerebrospinal rhinorrhea may be due to a tumor of the brain and internal hydrocephalus or may occur without a demonstrable cause

Increased intracranial pressure is apparently a necessary preliminary condition to spontaneous rhinorrhea. The rhinorrhea must be regarded as an attempt on the part of the body to effect decompression. A study of a small series of autopsy reports revealed three routes followed by the fluid (1) from the floor of the anterior horn of the widely dilated lateral ventricle through the cribriform region of the nose (2) from the basal subarachnoid cistern through the cribriform plate into the nose and (3) from a persistent lumen in the olfactory bulb through the cribriform plate into the nose.

The quantity of fluid lost in twenty four hours has been estimated at from 30 to 1500 c cm. The fluid is clear and watery and neither stains nor stiffens the handkerchief. The diagnosis should be made by laboratory examination of the discharge or by injecting a dye into the spinal canal and watching for its appearance in the discharge. The dripping from the nose may be constant at first and become intermittent later. Sometimes it may cease for weeks thereby suggesting that a localized ascending inflammation has closed the fistula with exudate. When the pressure behind has become sufficiently great to break down the obstruction the flow starts again. The successive obstructing and freeing of the communication may continue for years. The danger associated with cerebrospinal rhinorrhea is meningitis.

In the treatment cases with increased intracranial pressure must be separated from those in which no pathological intracranial condition is present. In the former the cause of the increased intracranial pressure should be removed. In the latter an attempt to close the opening may be made. The head may be placed in a position that will prevent a continuous flow. The nasal cavity should be in a horizontal position and the patient in the prone position. This method aids in the spontaneous reparation of the fistula. In some cases the use of sodium and potassium iodide has been beneficial. In others the application of a 10 per cent solution of silver nitrate to the opening every two weeks has been found of value. A transfrontal flap operation with packing of the cribriform plate with iodine packs to stimulate scar formation has been successful. In some cases good results have been obtained by roughening the dura over the cribriform plate and covering this area with a flap of muscle and fascia from the temporal region after cutting the olfactory nerve and crushing the termination of the bulb on the cribriform plate.

D W H R S. Some Clinical Syndromes of the Fifth Cranial Nerve. J. Neurology and Psychiatry, 1933, 3, 1-11.

The author reviews the literature and reports five cases selected from a larger series of involvement of

the fifth cranial nerve trunk ganglion or its branches by a neoplasm.

He states that the ganglion or its main roots may be involved by primary or secondary neoplasms of the following types:

- 1 Tumors derived from the ganglionic tissues neurofibromata gangliocarcinoma endotheleoma meningioma
- 2 Tumors derived from the meninges of the base of the brain or from the brain meningioma glioma
- 3 Tumors in the cerebellopontine angle neurofibromata meningioma
- 4 Tumors of the maxillary antrum carcinomata
- 5 Tumors of the nasopharynx involving the cranial base by direct extension from below through the sphenoid sinus
- 6 Metastatic tumors lymphosarcoma sarcoma

The clinical aspects of these lesions as they relate to the fifth nerve are discussed in detail. In the author's opinion it is the peculiar combination of severe constant pain with sensory loss or anesthesia over the same area which distinguishes the conditions discussed from the classical trigeminal neuralgia. Because of the frequency of mistakes in the diagnosis he urges closer cooperation between the physician the neurologist and the rhinologist.

HALL HAYES MD

Heilmann K. Regeneration of the Inferior and Superior Alveolar Nerves After Operation and Trauma. J. Laryngology and Otology, 1933, 53, 1-11.

Section or destruction of the inferior and superior alveolar nerves is done intentionally for the relief of neuralgia and unintentionally in the removal of tumors. The nerves may be destroyed also by fracture of the roots of molar or wisdom teeth. The nerves may be destroyed also by fracture of the alveolar process. The results are unpleasant. The degree of damage. The results are unpleasant. The author denies that death of the pulp of the involved tooth occurs. There is sensibility not devitalization. Even trophic changes do not take place. On the other hand toothache as a warning of beginning caries does not occur.

The author studied the regeneration of these nerves in fourteen cases. Two were cases of tumor of the upper jaw three cases of cysts of the upper jaw and the rest cases in which the Caldwell-Luc modification of the Denker operation had been done. He concluded that regeneration occurs in all cases of continuity of the nerve. The period of regeneration of the gum ranges from six to twelve weeks. The return of sensibility of the dental nerves is first demonstrated by electrical tests after four or five months. Complete return of sensibility requires a period of years.

F. HARTZEL (2)

## SPINAL CORD AND ITS COVERINGS

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The observation of Lewis, Pickering, and Rothschild that the higher the cuff on the arm the quicker the anaesthesia was confirmed. It was found also that local pressure over a nerve which did not affect the blood supply to the arm produced the same type of paresis and anaesthesia which was progressive centripetally.

Experiments carried out in 1929 showed that the distal portion of the nerve is more resistant to lack of oxygen than the more proximal portion.

From the findings of these studies and those of studies carried out by others which he reviews the author concludes that conduction block as a result of this type of compression is probably due to several factors: (1) anoxemia (2) defunction of the nerve by the cuff (3) the accumulation of acid metabolites and (4) injury of nerve membranes with consequent changes of permeability, depolarization and loss of conduction. Loss of circulation to a given stretch of nerve is considered the most important factor in this type of conduction block.

Two cuff experiments on the same arm demonstrated that the tingling is produced in the nerve trunk directly under the cuff and that the release of blood to the compressed area plays an important part in the sensation of tingling; this sensation starting after the conduction is restored.

As a result of his studies and those of other investigators the author believes that tingling corresponds to an activity of the Thunberg prick nerves—that is, to a low frequency of impulses in superficially ending fibers and correlates with the slowly conducting fibers discovered by Adrian in mammalian nerves possessing end organs with a slightly higher threshold for mechanical stimuli than the larger touch fibers.

He concludes that nociceptive reactions are induced from the skin by the activity of special nerve fibers of slower conduction rates than the touch and pressure fibers—conduction rates corresponding to B range and C class fibers and that

therefore the evidence produced by Foerster demonstrating that sympathetic afferent fibers are concerned in pain reactions is strengthened.

O. W. JONES, JR., M.D.

Ruth H. S. Diagnostic Prognostic and Therapeutic Nerve Block. *J. Am. Med. Ass.* 1934, 1: 419.

Following a review of the literature on nerve blocks the author reports his experience with therapeutic peripheral nerve block covering a period of two years. He states that the patient should be warned of the various sequelae which follow the injection of alcohol into nerve trunks. The injection should be made without the induction of general anesthesia as the paresthesias during the injection are important for accurate localization. A few drops of alcohol properly placed give better results than several cubic centimeters injected into the surrounding tissues. The injection should not be repeated until several days have elapsed as the maximum effect of the first injection is often delayed.

The author discusses the various conditions in which nerve injections are done, the information that has been gained regarding pain pathways and the therapeutic effects of section of the sympathetic. He concludes that the injection of procaine and alcohol into nerve tissue is not only an alternative method but also a more or less efficacious method of disrupting nerve impulses with possibly a greater field of application than nerve section.

ROBERT ZOLL, JR., M.D.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Iribarne, J., and Ortiz, N. C. Primary Tuberculosis of the Breast (Tuberculosis primitiva del seno) *Bol Soc de obst y ginec de Buenos Aires*, 1933, VII, 822

The authors report three cases of primary tuberculosis of the female breast. The patients were sixteen, twenty-four, and eighteen years of age. Only the twenty-four-year-old patient was married and had borne children. The fact that one of her children died while it was nursing indicated that the patient probably had tuberculosis of the breast at that time although it did not become manifest until later, after an injury. In the case of the girl sixteen years of age the tuberculosis was probably initiated by trauma and a year later was reactivated by it. In none of the cases could any extra-mammary focus of tuberculosis be found.

The best treatment is simple and economical excision of the involved tissue if the lesion is circumscribed and surgical removal of the whole breast if the lesion is diffuse. The pectoral muscles and the aponeurosis should not be resected, and the axillary glands should not be cleaned out unless they are markedly diseased. Resection is best done with the radiobistoury, which closes the blood vessels and lymphatics. This form of surgical treatment results in complete cure. It was used in the second and third of the authors' cases. In the first case, which was treated with the roentgen rays and the Kromayer lamp, there were several recurrences. Recurrences developed also in the second case until surgical treatment was given.

AUDREY GOSS MORGAN, M.D.

Quick, D. Radiation in Primary Operable Breast Cancer. *J Am M Ass*, 1933, CI, 2091

The author discusses the treatment of cancer of the breast by irradiation alone and irradiation combined with surgery.

Irradiation is used most frequently after operation. The author believes that operation with post-operative irradiation is followed more frequently by freedom from evidence of the disease at the end of a period of five years than treatment by operation alone.

He states that in primary operable cancer of the breast, pre-operative irradiation with X-rays of maximum intensity offers more than any other type of irradiation. While destruction of all of the malignant cells is not expected, many of the cells are completely destroyed. The chief effect is inhibition of the growth of the tumor and regressive and degenerative changes in the tumor bed and cells. Preferably, the irradiation should precede the operation by

six or eight weeks. The axillary fibrosis resulting from the irradiation renders axillary dissection slightly more difficult, but healing is not impaired. All patients given pre-operative irradiation should also receive postoperative irradiation.

When cancer of the breast once becomes inoperable it remains inoperable. As a rule the more spectacular the regression of the tumor under irradiation, the greater its malignancy and the greater the danger in surgical approach.

In the author's opinion there is no convincing evidence that the combination of irradiation of the ovaries with pre-operative and postoperative irradiation of the breast is of any practical value.

While the use of irradiation alone may at times be justifiable or even the best form of treatment in certain cases of primary operable cancer of the breast, such as those of patients unable to stand operation and those of very young patients, in which surgery gives uniformly poor results, it cannot yet be regarded as the method of choice in the majority of cases. In general, the results obtained in cancer of the breast have been markedly improved by radical operation preceded and followed by irradiation.

EARL O. LATIMER, M.D.

## TRACHEA, LUNGS, AND PLEURA

Moore, J. A. Intrapleural Pneumolysis. *J Thoracic Surg*, 1934, III, 276

Moore regards the thoracoscope of Unverricht as the best instrument for the operation of closed intrapleural pneumolysis, and the electrosurgical method as superior to the cautery method. He believes that Maurer's technique of dividing an adhesion at its parietal insertion should increase the indications for the operation and greatly reduce the incidence of empyema.

A study of the reported results of the closed method indicates that it is of value as an adjunct to the artificial pneumothorax treatment of pulmonary tuberculosis and is safer and more effective than the open method.

ELIZABETH M. CRANSTON

Sargent, E., and Iselin, M. Abscess of the Lung with Pleural Effusion. *J Thoracic Surg*, 1933, III, 109

The authors emphasize the gravity of pleural effusion in cases of lung abscess. Three types are described: (1) pleural phlegmon due to the direct rupture of an abscess into a free pleural space, (2) encapsulated effusion due to direct rupture or the spread of a distant infection in the presence of adhesions, and (3) diffuse pleural effusion due to extension of a suppurative process in the lung. The last two types are discussed in detail. In the en-



capsulated type which is a slowly developing process the presence of air suggests the rupture of an abscess into the pleural space and the pus shows organisms similar to those in the sputum

When the empyema masks the signs of abscess the diagnosis is difficult. However following drainage of the empyema the symptoms may suggest an abscess and the site of the abscess may sometimes be revealed by a roentgenogram. Iodized oil may be of aid in the localization.

The best results are obtained by treatment in cases of encapsulated abscess. In some cases drainage of the empyema results in cure. When the symptoms persist aspiration may reveal the pocket. Drainage into the thoracotomy wound then leads to cure.

When in cases of the third type of effusion the abscess is recognized and localized a large thoracotomy is advisable and drainage of both the pleural space and the abscess may be accomplished in one stage. However this procedure is not applicable to many patients.

When the abscess is not localized the empyema should be drained and exploration for the abscess should be done later. Failure of improvement to occur after drainage suggests multiple pockets requiring localization and drainage.

WILLARD VAN HAZEL, M.D.

Oerholt R. H. The Treatment of Pulmonary Abscess by Peripheral Lung Fixation and Regional Thoracoplasty. *J. Thorac. & S.* 1933 1: 34.

The author recommends obliteration of the cavity of a pulmonary abscess by peripheral fixation of the lung and regional thoracoplasty. This procedure is performed in three stages. In the first stage the ribs are exposed by the formation of a large flap and the region of the lung to be collapsed is marked off by inserting gauze saturated with iodine beneath the uppermost and lowermost rib of the area and beneath the periosteum of a segment of the intervening ribs at the periphery. The wound is then closed. In the second stage which is performed from ten to fourteen days later exposure is obtained at the first stage and the periosteum is stripped from all of the ribs within the area marked off in the first stage. This allows the pleura to fall from the ribs. The space between the ribs and the pleura is then packed with vaselined gauze. The ribs are preserved for counterpressure. In the third stage which is performed after an interval of from ten to fourteen days the ribs within the area of collapse are resected the gauze packs are removed the wound is closed and a compression dressing is applied.

From experiments on dogs the author concluded that in the use of this procedure the desired collapse of lobe is collapsed more effectively than by other methods and there is less interference with the other lobes than when collapse is produced without peripheral fixation of the lung. He believes that in cases

of lower lobe abscess phrenic excision is more effective when it is preceded by peripheral fixation because the lung is prevented from shifting its position.

Three clinical cases with a favorable prognosis are reported. C. G. SHEARON, M.D.

Prout A. Inflammatory Tumors of the Bronchi. Experiment 1 and Pathological Consideration. *Arch. Otolaryng.* 1934 113.

Unsuccessful attempts were made to reproduce experimentally the benign bronchial tumors of inflammatory origin described by the Jacksons. These tumors are not true blastomata but their histological structure is similar to that of certain other hyperplastic processes supposedly of inflammatory origin such as polyps of the nose and larynx. They are easily differentiated from the common granulation seen in the bronchi in cases of long standing foreign bodies for they are tumors of a permanent character and are subepithelial.

These tumors do not seem to be produced by the irritating action of the pus coming from suppurative processes of the bronchi. By obstructing the bronchus they tend to cause bronchiectasis and suppurative disease of the lung. They may represent a herniation of chronic inflammatory tissue coming from carcinoma processes of the lung into the bronchial lumen. As a rule there is a history of frequent attacks of influenza bronchopneumonia with an atypical course. In the present state of our knowledge these tumors appear to be classified most satisfactorily as inflammatory polyps of the bronchi.

Geo. O. COLLETT, M.D.

Spasokukockij and Vinograd Finkel. The Pathogenesis of Acute Empyema. (*Z. f. Frage d. Path. u. allg. klin. Med.*) Pleurid. 1933 25: 11369.

Dissatisfied with the empirical method in the treatment of acute empyema the authors undertook the task of studying the pathogenesis of the disease in their own material (more than 100 cases operated on in the last two years) in order thereby to arrive at a more satisfactory management. From their findings they came to the conclusion that acute empyema is usually a secondary rather than a primary disease. The primary form is uncommon. Among their own cases the authors were able to find only 2 of the primary type—one in which the infection entered the pleural cavity directly from a gunshot wound of the chest and the other from a perforation of the esophagus. Nearly all of the patients were referred to the authors with the diagnosis empyema without involvement of other organs. In only 7 was the empyema complicated by some other condition such as neoplasm, gangrene of the lung or bronchiectasis. At autopsy in 17 cases pulmonary suppuration was found definitely in cases and could not be positively excluded in 5.

In the cases of the patients who recovered or survived there were clinical symptoms suggesting the

presence of suppuration of the lungs. The authors divide these cases into 2 groups—those with positive evidence of lung suppuration and those with less certain evidence of that condition. In the first group were the cases with roentgenologically demonstrated lung abscesses, spontaneous pneumothorax, the clinical picture of rupture of a lung abscess into the pleural cavity, and the expectoration of gangrenous lung tissue. In the second group were cases with copious expectoration which stopped after the formation of the empyema. The diagnosis of lung abscess associated with acute empyema is based on the following criteria:

1. The findings of roentgen examination (thorascopy and thoracography) immediately after thoracentesis.

2. The findings of repeated thorascopic examinations soon after the operation.

3. The findings of microscopic examination of the sputum for elastic fibers and blood.

4. The expectoration once or continuously of large amounts of pus.

5. Evidence of bronchopleuropulmonary fistula during the postoperative course after drainage of the empyema.

6. Metastatic infection of organs at a distance (thrombophlebitis of the pulmonary veins following pulmonary suppuration, and infected emboli arising therefrom).

The authors are of the opinion that encapsulated empyema may likewise have its origin in pulmonary suppuration. The onset and fate of serous effusion also seem to support their theory that acute empyema has its origin in pulmonary suppuration. Contrary to the general belief, the serous exudate is often infected, sometimes containing even streptococci. Later it becomes absorbed or changed to a seropurulent or frankly purulent exudate. This result depends, not on secondary infection (possibly from aspiration), but on the primary presence of a focus of suppuration in the parenchyma of the lung, pleural irritation, and subsequent infection of the effusion by extension. Consequently, empyema is not a primary, but a secondary disease, usually metapneumonic, depending on suppuration in the lung.

The treatment depends on the type of the pleurisy—whether it is serous, seropurulent, purulent, encapsulated, or associated with pneumothorax—and must be correlated with the degree and character of the process in the lung.

Experience shows that early pleurotomy, even a closed one, is of no value in the first days of the formation of a purulent exudate, when the lung is still involved by an acute suppurative process, on the contrary it may even be detrimental.

Several careful aspirations of the pus—so called decompression punctures—are of great value, improving the expansion of the lung, favoring obliteration of the cavities from which the pus is removed, and preventing the development of chronic empyema and residual cavities.

G ALIPOV (Z)

## HEART AND PERICARDIUM

Ramsdell, E. G. Stab Wounds of the Heart. *Ann Surg*, 1934, **xcv**, 141.

The author reports a case of stab wound of the right ventricle which was operated upon successfully. The patient, a negro forty-one years of age, received a knife wound in the left fifth interspace about 2 cm to the inner side of the nipple. Operation was performed under general anesthesia about one and a half hours after the injury. From the stab wound an incision was made upward along the sternal margin and downward obliquely along the eighth rib. The left pleural cavity was found open and partially filled with blood. The pericardium was exposed by dividing the fourth, fifth, sixth, and seventh costal cartilages.

On the upper anterior surface of the pericardium a wound about 2 cm long was found. When the pericardial sac was opened, a freely bleeding wound of the right ventricle was seen. This was closed with two interrupted sutures of silk. After evacuation of the clots the pericardium was closed with interrupted widely spaced chromic sutures. The chest wall was closed in layers with drainage.

Heart action became regular in a few hours. After an uneventful convalescence the patient was discharged on the nineteenth postoperative day. Five and a half months after the injury the only abnormality noted on electrocardiography was an inverted T wave in Leads 1 and 2, indicating "disease of the ventricular muscle."

The author emphasizes that the possibility of injury to the heart should be considered in all cases of penetrating wounds of the chest, and that the formation of a chondroplastic flap through an intercostal incision is the easiest approach.

To date, 427 cases of wounds of the heart have been reported. Forty-nine were collected by the author since Schoenfeld's report in 1927. Two hundred and thirty-three of the patients recovered, and 105 (45.56 per cent) died. Among the 50 cases tabulated by the author there were 19 of wounds of the left ventricle with recovery in 10, 12 of wounds of the right ventricle with recovery in 10, 3 of wounds of the left auricle with recovery in 1, 2 of wounds of the right auricle with recovery in 1, and 14 of miscellaneous wounds of the heart with recovery in 11. The mortality in the 50 cases was 34 per cent.

The article has an extensive bibliography.

ARTHUR S. W. Touroff, M.D.

Burke, E. M. Metastatic Tumors of the Heart. *Am J Cancer*, 1934, **xx**, 33.

The author reports 14 cases of metastatic tumor of the heart which were found at autopsy among 327 known cases of malignancy. The 14 cases included 1 each of carcinoma of the ovary, Hodgkin's disease, epithelioma of the esophagus, lymphosarcoma of the neck, epithelioma of the tongue, endothelioma of the pelvis, melanoma of the wrist, epithelioma of the larynx, lymphosarcoma of the bowel, embryonal

## INTERNATIONAL ABSTRACT OF SURGERY

tumor of the kidney epithelioma of the labia and melanoma of the back and 2 of carcinoma of the breast. The subjects ranged in age from twelve to sixty five years. Eight of them were males.

The degree of involvement of the heart muscle varied from minute implants to replacement of a considerable portion of the heart muscle by tumor tissue. The heart valves were not involved in any of the cases. In the majority the left side of the heart was more involved than the right side. In none were metastases to the heart suspected during life.

The author suggests that the implantation of tumor cells in the heart may occur (1) as the result of invasion of the blood vessels of the lungs by metastatic growths (2) by way of the lymphatic duct and the superior vena cava through the bronchial and axillary veins or (3) by retrograde conduction along the lymphatic channels. In 13 of the 14 cases reported there were metastases in the lungs.

C G SUTKOV MD

Piersol M H Griffith G C O'Hara F J and Lee W E The Operation of Cardiolysis in Adhesive Pericarditis with Pick's Syndrome. *Am S C* 1934 20 135

Surgical intervention to cure adhesive pericarditis was first suggested by Weil in 1895. DeLorme in 1898 was the first to propose decortication of the heart. This operation was first performed by Sauerbruch in 1901. In 1902 Brauer proposed a much simpler procedure namely excision of ribs and costal cartilages over the precordium. This operation was successfully performed by Peterson in 1902. The authors believe that as a rule the DeLorme rather than the Brauer procedure is indicated.

One great danger in surgery of the pericardium is the possibility of injuring the pleura. The area of safety first described by Voetsch in 1897 is a small area uncovered by pleura in front of the pericardium and beneath the sternum. This area is extremely variable in size and location. Bourne mentioned two other dangers associated with operations on the heart (1) the danger from firm adhesions to the chest wall and neighboring tissues and (2) the danger of rekindling local inflammatory processes by mechanical interference.

The transpleural approach is comparatively easy but does not give sufficient exposure. Splitting of the sternum has been proposed but is a shocking procedure. Shipley has devised a combined transsternal and chondroxyphoid approach which covers covered portion of the pericardium and left margin of the pleura are exposed. The left pleura can then be reflected laterally and the pericardium opened. It is important to attempt to differentiate congenstrictive mediastinopericarditis (Pick's disease) from polyserositis. In the former the fundamental difficulty is pericardial and the pleural effusion ascites and hepatic enlargement are secondary to circulatory obstruction. In the latter the pericardial dis-

ease is part of a process which causes also chronic pericarditis as the result of a long grade chronic inflammatory reaction of the peritoneum about the diaphragm which gradually involves the pericardium and pleura. The two conditions are similar and perhaps at times indistinguishable but from the standpoint of surgical treatment an attempt at differentiation should be made. Since in Pick's disease the symptoms are due to primary pericardial involvement, cardiolysis would seem to offer more hope of relief in this condition than in polyserositis in which the chronic inflammatory process continues even when decompression of the heart has been performed.

The authors report two cases in great detail. The first was that of a man twenty five years of age who was suffering from a constrictive mediastinopericarditis which apparently was due to a bilateral pneumonia occurring seven years previously. The diagnosis was based on the following findings (1) venous engorgement and dependent edema with hepatic and splenic enlargement (2) slight cardiac enlargement with negative physical findings (3) a lowered arterial tension (4) a history of bilateral pneumonia and (5) increased venous pressure. At operation the heart was freed and a section of pericardium measuring about 6 by 3.5 cm was removed. Although the arterial pressure rose and the venous pressure fell demonstrating that the operation had been effective the patient died ten weeks later.

In the second case that of a boy of thirteen years the diagnosis was confirmed by a ray examination which demonstrated calcification of the pericardium. Operation was performed in two stages because during the procedure the patient's condition became critical. Following the second stage very great improvement was noted. The arterial and venous pressures became normal. The arterial and venous receded and the edema of the liver and spleen appeared.

Abstract S H TUCKER MD

## ESOPHAGUS AND MEDIASTINUM

Gonzalez A A Dilatation of the Esophagus. *Megacardiophaga* mega of the Cardia (Dilatation of the Cardia) 933 p 95 ad p m / C 25 7

This article is limited to the diffuse dilatation of the esophagus which in some instances is undoubtedly congenital and in others due to disturbances of the sympathetic nervous system. Essential diffuse dilatation with true enlargement in all directions is proper ly termed congenital megacardiophaga. In some instances it is a manifestation of the functional inferiority associated with viscerotonia in others of visceral gigantism. It often remains latent until a secondary cardiopneum develops. The author reports the case of a man of thirty five years whose symptoms were precipitated by an esophagitis with resulting cardiopneum. Gonzalez agrees with Keith and Abell regarding the existence of a true inferior esophageal sphincter. He bases his opinion chiefly on Keith's findings in

the cadaver. He states that sympathetic overstimulation of the œsophagus would provoke cardiospasm with consequent hypertrophy of the muscle fibers and, in the phase of fatigue, a terminal dilatation. The permanent congestion in the submucosa may cause connective tissue formations analogous to hemorrhoids. This condition may be the basis of a true organic stenosis. In the latter condition Heller's cardiœsophagoplasty gives good results.

The author reports five cases of cardiospasm treated by Plummer's method with excellent results. He believes that Plummer's method is the procedure of choice for uncomplicated cases. If it is unsuccessful, dilatation with forceps through a gastrotomy opening is permissible.

The article contains roentgenograms and anatomical drawings.  
M E MORSE, M D

Waldbott, G L. So-Called "Thymic Death"  
The Pathological Process in Thirty-Four Cases  
*Am J Dis Child*, 1934, XLII, 41

The author examined the records of 122 cases in which status thymolymphaticus was given as the cause of death. These records came from the pathologists of 10 hospitals. Sixty-eight cases were excluded from the study because the lymphoid hyperplasia was associated with some other condition such as hyperthyroidism, birth trauma, gastro-enteritis, and respiratory infection which might itself have been sufficient to cause death.

The 34 remaining cases were those of 6 adults and 28 children. Nineteen of the patients were females. Most of the patients had been in perfect health up

to the time of death and were free from pathological lesions indicating previous disease. The average weight of the thymus gland was 35.2 gm. The largest thymus weighed 85 gm. In 16 cases minor incidents, ordinarily non-fatal, occurred just before death. In 7 cases dyspnoea, stridor, fever, and shock occurred.

In all of the cases uniform and characteristic changes consisting of capillary congestion and extravasation of blood cells and œdematous fluid were found in the lungs. These lesions alternated with areas of emphysema and atelectasis. In 17 cases petechial hemorrhages were found in the heart, pleura, lymph nodes, and other viscera. In some dilatation of the right side of the heart, degenerative changes in the liver, and œdema and capillary congestion in other organs were found. Hypoplasia of the suprarenal glands and hyperplasia of the lymphoid organs were present.

Comparison of this pathological process with that found in anaphylactic shock in man shows a close resemblance, if not complete identity, of the two conditions. This is suggested also by eosinophilia of the tissues and an allergic family or personal history.

From his findings the author concludes that death may be the result of a primary anaphylactic œdema of the lungs and ensuing asphyxiation. This theory is based on the assumption that anaphylactic shock may occur from the incorporation of non-protein substances in the body, and that absorption of shock-producing antigen may take place by ways other than injection. Evidence supporting this assumption is presented.  
J DANIEL WILLEMS, M D

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Carnett J B Pain and Tenderness of the Abdominal Wall J Am M A 934 c 345

Carnett states that pain and tenderness occur far more frequently in the abdominal wall than in the abdominal viscera. Palpation over relaxed abdominal viscera fails completely to differentiate parietal from visceral tenderness. Parietal tenderness and inferentially pain are demonstrated best by making firm palpation while the patient balloons out the abdomen and holds the abdominal muscles as tense as possible. Any tenderness thereby disclosed is necessarily parietal as the tense muscles keep the examiner's fingers from coming into contact with the viscera.

Hypersensitiveness to pricking or stroking of the abdominal skin with a pin or to the pinching of a liberal fold of skin and fat indicates parietal tenderness. The author believes that parietal pain and tenderness of the abdomen are usually due to neuroma and are independent of intra abdominal lesions. The acute lesions he states are usually due to acute infections that do not require operation and disappear rapidly on subsidence of the toxemia resulting from the infections. In chronic neuralgia the usual cause is some form of spinal trouble such as scoliosis excessive lumbar lordosis or spinal arthritis. Carnett does not regard parietal pain as the usual surface manifestation of visceral disease resulting from the viscerosensory reflex (Mackenzie Head Sherren) and does not accept Morley's theory that parietal symptoms are brought about by a peritoneocutaneous reflex. Jackson M. Morley MD

Carter J Lines and Serous Peritonitis (A) C n d S r a l u P n t n l s R M C 933 u 5

Cusler reviews the literature on the bacteriology of peritonitis due to appendicitis citing the work of Weinberg William Katzenstein Aschoff Lohr Rassfeld and Haenschel and the various serotypes pared and tested by them. On the basis of the types of bacteria found by Aschoff and Lohr Rassfeld and the suggestion of Jirasek a serum has been developed which has been used in about fifteen cases to date. The beneficial effect is manifested by a fall in the temperature slowing and improvement in the quality of the pulse and improvement of the general condition.

The author mentions the various methods of administering the serum. He favors the earliest possible intravenous administration of approximately 0.05 cc cm at one time. If necessary this should be repeated on the second and possibly the fourth day. Other reliable methods should not be neglected.

The mortality in the author's clinic has fallen from 25 to 15.0 per cent. How much of the decrease can be attributed to the use of the serum is unknown. Further careful observation is necessary.

Haim (2)

Salick L Experimental Research on the Action of Hypertonic Solutions in Perforation Peritonitis (K c h e s p e m e t i s u l l e d e l l C l / 933 4 p n t i d a p e f r a z e)

The author reports experiments carried out on rabbits to determine the relative merits of hypertonic salt and glucose solutions given intravenously in perforation peritonitis. Intestinal perforation and secondary peritonitis were produced by completely severing a loop of small bowel through a midline incision of the abdomen and then tightly closing the abdomen after satisfactory hemostasis had been obtained. The animals were not anesthetized as it was feared that anesthesia might lead to errors of interpretation. The rabbits were divided into seven groups. The procedure and the results in each group were as follows:

Group 1 the control group ten rabbits. No treatment given. Death occurred on an average of eleven hours after the operation.

Group 2 ten rabbits. One cubic centimeter of a 10 per cent salt solution per kilogram of body weight was injected through the marginal ear vein immediately after the operation. Death occurred on an average of twenty-five hours after the operation.

Group 3 ten rabbits. The same salt solution in the same concentration and dosage was injected intravenously five hours after the operation. Death occurred on an average fourteen hours after the operation.

Group 4 four rabbits. The same salt solution in the same concentration and dosage was injected ten hours after the operation. Death occurred on an average of thirteen hours after the operation.

Group 5 twelve rabbits. One cubic centimeter of hypertonic (30 per cent) glucose solution per kilogram of body weight was injected intravenously immediately after the operation. Death occurred on an average of eight and three tenths hours after the operation.

Group 6 ten rabbits. The same glucose solution in the same concentration and dosage was injected five hours after the operation. Death occurred on an average of eleven hours after the operation.

Group 7 six rabbits. The same glucose solution in the same concentration and dosage was injected ten hours after the operation. Death occurred on an average of twelve hours after the operation.

From his findings the author draws the following conclusions:

1. Hypertonic salt solution had a more beneficial effect on the course of the perforation peritonitis than hypertonic glucose solution.
2. The beneficial action was most pronounced when the salt solution was given early.
3. Hypertonic glucose solution had a decidedly unfavorable effect on the course of the perforation peritonitis.
4. The favorable action of the salt solution was probably due to a hypochloranum resulting from a relative dehydration of the tissues.

GEORGE C. FISHER, M.D.

### GASTRO-INTESTINAL TRACT

Westphal K. Irritable Stomach, Gastritis and Peptic Ulcer (Reizmagen, Gastritis und peptische Ulcera). *Zeitschr. f. d. Med.*, 1923, cxxv, 673.

In studies of ten resection specimens the author confirmed the accepted histological findings in gastric ulcer. He states that the mildness of the inflammatory changes found in the gastric mucosa in some cases is explained by the pre-operative dietary and medical treatment. The frequently marked hypertrophy of the muscular elements of the gastric wall and the elevation and hypertrophy of the mucosal rugae are to be regarded as anatomical signs of exaggerated physiological function. In four experiments on animals he placed a viable resection specimen in physiological salt solution at body temperature and then added 1 or 2 c. cm. of a 1 per cent pilocarpin solution for pharmacological stimulation of the vagus. In every instance this was followed by the formation of mucosal folds not previously evident and a distinct increase in the elevation of the folds previously present, all of which disappeared when the specimen died. Histological examinations of a depressed fold showed local thickening, and on cross section a triangular arrangement of the muscularis mucosae with the apex toward the mucosa. The histological findings in the mucous membrane (cellular exudation, pin point erosions) never progressed beyond those which the author observed in dogs subjected to vagus irritation.

The pale, anemic, edematous area seen in the experiments on dogs were not found in clinical cases of ulcer. The frequently extensive lymph follicle development is regarded not as a manifestation of chronic inflammation, but as a primary constitutional anomaly. The well known proliferation of the mucosa and the muscularis mucosae seen at the borders of chronic ulcers is interpreted as a sign of increased physiological function. From these facts the author draws the following conclusion: "On the basis of these anatomicohistological findings in the ulcerated stomach as well as on the basis of other observations the concept of the hyper-ergic stomach which develops following experimental chronic irritation of the vagus differs from that of gastritis."

Ulcerous gastritis begins with the preformed erosions of vasomotor peptic origin. It is limited to the antrum and is not a diffuse gastritis. The marked pin point erosions probably represent the transition from the normal to the pathological. The author believes that they may develop relatively easily from the hyper-ergic irritable stomach. He attempts new pathological interpretations based on the assumption of a primary endogenous constitutional hypo-ergic or hyper-ergic gastric function. The irritable stomach seems frequently to be in a pre-ulcerous state. A gastric or duodenal ulcer practically never develops from a true gastritis or gastro-enteritis.

The author believes that there are a large number of individuals with gastric complaints suggesting ulcer who have neither an ulcer nor a gastritis. In the cases of such persons the diagnosis of dyspepsia is inadequate. In the author's opinion the basis of these conditions is, according to the state of gastric function, a hyper-ergic or hypo-ergic irritable stomach (vagotropic increase of function or sympathetotropic inhibition of function).

In cases of hyper-ergic irritable stomach there is severe early or late pain with frequently increased acid values and a normal or only slightly increased cell count and leucocyte percentage in the gastric juice. Roentgenographic examination shows a good or markedly tonic stomach with usually vigorous peristalsis and high and sometimes slightly narrowed, but more frequently slightly broadened folds. In cases of hypo-ergic irritable stomach there is severe early and late pain with usually an achylia which is not yet histamin resistant, at times only marked hypo-acidity and a normal or low cell count and leucocyte percentage in the gastric juice. Roentgenographic examination shows surprisingly broad mucosal folds in the cardia and occasionally rapid emptying of the stomach. These two syndromes are not indicative of true gastritis.

The author recognizes still another syndrome, which he designates as "hyper-ergic irritable stomach of the second grade or hyper-ergic gastritis." In this condition there is marked broadening of the mucous membrane folds with an increase in the cell count to 1,500 and a high leucocyte percentage (from 60 to 70 per cent) in the gastric juice. The author considers this a true fundus gastritis without much disturbance of the hydrochloric acid secretion due to pre-stasis phenomena in the capillaries and smallest veins of the mucosa which he has demonstrated experimentally to be secondary to prolonged vagus irritation. From this stasis a localized edema, hemorrhages due to diapedesis, hemorrhagic infarction, and hemorrhagic erosions in the fundus develop. The author believes this process is similar to that occurring in the mucous membrane of the uterus. For the development of erosions in the region of the antrum a gastric juice containing hydrochloric acid is necessary. The marked cellular exudation or very small pin-point erosions undergo further development as the result of vasomotor irritation in the nature of a

sudden circumscribed ischemia with the secondary migration of the histiocytes in this area toward the gastric lumen the development of edema and finally peptic digestion leading to a well-developed erosion which may extend down to the lower third of the mucosa. The hydrochloric acid and pepsin factors in this process are therefore the important factors in the development of the deep erosions. The development of an erosion requires more than a simple superficial tissue defect caused by hydrochloric acid in the concentration found in every stomach otherwise we would all develop ulcers.

The process of ulcer formation follows in general that of the described erosion formation. Less frequent are ulcers which develop suddenly from an acute factor on due to a vasomotor disturbance. The chronicity of the ulcer is explained by mechanical factors such as vigorous contractions of the muscularis propria secondary to mechanical irritation which cause ischemia of the ulcer bed in vagus irritated stomachs and in areas which are apparently susceptible because of marked development of the intramural nervous system and poor blood vessel anastomoses (lesser curvature and pyloric area).

Attention is called to the well known seasonal variations in the incidence of ulcer of the stomach and duodenum.

To answer the question as to how such a gastric hyperergism may develop from the normal functional stimulation in normal digestion various explanations are suggested.

As treatment chiefly regulation of the diet is recommended.

Experimental In the Effect of Gastric Resection on the Bacteriology and Chemical Significance of the Small Intestine and Its Clinical Significance (L. A. McKeown, J. A. B. K. L. G. and Ch. M. D. Du ndas and H. K. L. G. B. du ndas).

In a previous article Hertel reported experiments carried out on animals to determine the effect of gastric resection on motor function of the stomach and the absorption of nourishment in the small intestine. In the experiments reported in this article the authors studied the bacterial and chemical conditions of the contents of the small intestine in dogs with a fistula made in the upper middle lower portion of the small bowel. One group of dogs were used as controls and the others subjected to a Billroth I or a Billroth II resection.

When chyme was removed from the intestine through a high fistula following feedings with meat milk or whey the number and growth of bacteria were found to be considerably less in the contents of the dogs than in the dogs subjected to gastric resection. The authors explain this finding by the fact that

after the Billroth I operation and especially after the Billroth II resection the food remains in the stomach such a relatively short time that it is much less acidified than under normal conditions and therefore bacterial growth is favored to a greater extent than in the normal stomach in which hydrochloric acid exerts a sufficient action. After the Billroth II resection there is in addition a disturbance of the anatomy and regurgitation of the food elements occurs into the excluded duodenal loop with resulting greater alkalization of the chyme which favors earlier multiplication of bacteria.

In the experiments on dogs with a fistula in the middle portion of the small intestine it was found that after both methods of gastric resection the bacterial content of the chyme was considerably greater than in the control dogs. This finding indicates that after resection a marked bacterial growth occurs in the proximal half of the small intestine even before the beginning of the passage of chyme.

In the experiments in which the fistula was made in the lower part of the small intestine no marked quantitative difference in the bacteria was found between the animals subjected to resection of the stomach and the controls. Nevertheless the studies showed that the character of the bacteria in this part of the intestine is as different for in the dogs subjected to resection of the stomach marked decomposition processes occurred and there was a decided predominance of gram positive apparently anaerobic bacteria.

From the clinical standpoint it may be said that in the resected stomach as the result of the loss of acid and rapid emptying achylia gastrica develops and that as a result of the failure of duodenal contents to reach the stomach bacteria wandering back from the colon are not killed in the stomach but find there a favorable environment. In this return of bacteria from the lower segments of the intestine into the stomach the exclusion of the pylorus in the resection also plays a part. The findings of Loehr and Bittle with regard to the presence of colic flora in the anastomosed stomach are in agreement with the findings of the authors experiments. Nevertheless symptoms following resection depend less on the bacterial content of the stomach and in fact a stimulation of the food elements.

These problems were also investigated by the authors in their animals with fistulae. After meat feeding in the animals with fistulae made on chyme in the lower part of the small intestine were highest in the cases of the dogs subjected to resection by the Billroth II method lower in those operated upon by the Billroth I method and lowest in the controls usually reverse! The authors attribute this reversal to the fact that in the resected stomach emptying occurs precipitately and a liquid food has

less opportunity to decompose than solid food. In agreement with these observations are the better clinical results obtained with a lactovegetable diet after surgery of the stomach.

Parallel with the indol determinations were the determinations of the excretion of indican. The investigations showed with certain regularity a relationship between the changes of the bacterial flora and the indol values on the one hand and the clinically observed postoperative motor disturbances of the intestine after gastric resection on the other. The demonstrated increase in the number of bacteria in the small intestine and the condition resulting from the change in the bacteria favor the development of other kinds of putrefactive bacteria and increased toxin formation which add enteritis to the disease picture. The fermentation tests carried out on the animals also demonstrated the conditions which are associated with dyspeptic symptoms in the intact gastro-intestinal tract. The postoperative agastric anemias are also related to these conditions. Apparently the association of the postoperative changes with a consequent gastritis is a prerequisite for the development of the sequelæ described. When these findings are considered in relation to the often observed postoperative neurasthenia, it appears probable that these patients do not always receive adequate consideration. However, the complaints of a certain percentage of patients subjected to gastric surgery are of a psychological character. The changed bowel conditions with precipitate emptying, the increased bacterial flora, the formation of toxins, and the increased indol content should be considered in the regulation of the diet. The diet should have a low meat content and should consist chiefly of milk, especially sour milk and lactic acid milk. Carbohydrates may also be given as they do not lead to the formation of intestinal toxins to the same extent as proteins. To overcome the anemia, liver and stomach preparations or drugs containing iron should be given.

RIFSS (Z)

Righi, D. Late Intestinal Perforations Following Contusion (Sulle perforazioni intestinali tardive da contusione) *Ann Ital di chir*, 1933, xii, 1274

The result of the action of contusive force on the abdominal wall depends on a number of factors, the most important of which are the elastic resistance of the wall and the mobility of the intra-abdominal viscera. Notwithstanding these protective factors, lesions of the viscera, especially of the intestinal tract, are not uncommon. The part of the intestinal tract most frequently involved is the ileum.

The contusive force may exert its action over a rather broad surface as in injury by an automobile wheel, or over a more limited area, as in injury by the kick of a horse's hoof. The action of the force may be exerted over an appreciable period of time or may be instantaneous. Varying also is the general type of action on the hollow viscera. There may be a simple compression such as occurs when a blunt force in

front compresses the intestines against the rigid vertebral column or the pelvis behind, or there may be a tearing such as occurs when the force pulls the loops of intestine beyond the limits of their distensibility. Tears are especially frequent in the region of the ileocecal valve and the duodenojejunal angle where the intestine is relatively fixed by the peritoneum or ligaments. Bursting may be produced by pressure causing hyperdistension of a portion of the intestines.

Righi reports a case in which the injury was of a still different character. The patient was a man twenty-seven years of age who was kicked and punched in the abdomen and sustained several shallow stab wounds of the abdominal wall and other portions of the body. At examination about forty-five minutes after the injury there were no positive findings of injury to the abdomen other than the stab wounds. The urine and feces were negative for blood. The patient was recovering in an apparently satisfactory manner when, fourteen days after the injury, about an hour after he had returned to bed following a short period of walking about the ward, and without any premonitory signs, he suddenly passed into a state of collapse accompanied by pallor, cold sweating, loss of consciousness, an imperceptible pulse, and coldness of the extremities. The usual treatment was given for the collapse. Soon after the patient regained consciousness he passed about 1,600 c cm of fluid and clotted fresh blood by anus, and a short while later he passed 300 c cm more. Signs of air hunger then developed. The next day more blood was passed. When it became apparent that the bleeding was not diminishing, operative intervention was decided upon.

Exploration of the peritoneal cavity revealed no signs of exudation or hemorrhage. The loops of intestine were distended only moderately, and the greater omentum was free and intact. The large intestine was normal, but the transverse colon was full of coagulated blood. Fluid blood was present in the ascending colon and the ileum to a point about 40 cm from the ileocecal valve. In this region there was considerable discoloration with red and brown spots on the mesentery and bowel. The antimesenteric surface of the intestine at this point was also discolored as though from a necrotic process, and was extremely friable. The center of the region was occupied by peculiar coagulated tissue which separated easily from the wall of the intestine, leaving a clean perforation into the lumen of the gut. The perforation was closed, the abdomen drained, and the abdominal wall closed.

Death occurred about fifteen hours after the operation. Autopsy revealed a diffuse purulent peritonitis although the suture lines were intact. Careful inspection of the anterior abdominal wall failed to reveal any evidence of a previous penetrating wound.

This case is interesting especially because of the difficulty of correlating the history and the findings of physical examination with the physiopathological



phenomena. The author considers the possibility of the primary presence of a simple ulcer of the ileum a hemorrhagic infarct or an anemic infarct followed by a direct traumatic injury of the bowel. He suggests that the perforation may have occurred at the time of the original injury but was so small that it was closed by prolapsing mucosa. He regards it as more probable however that the late development of the symptoms was due to a slowly developing pathological process. He believes that necrotic processes were brought about by pressure and the dystrophic effect of a disturbance of the plexuses of Auerbach and Meissner and that secondary bacterial infiltration occurred in the dead tissue.

A review of the literature is discussed.

Edwards H C, Dismore  
Jelunne A, Louis R

The author limits his discussion to the acquired types of diverticula of the duodenum and jejunum. After a detailed description of several pathological specimens he defines the primary acquired diverticulum of the duodenum as a thin walled sac opening from the concave surface of the bowel at the point corresponding to the penetration of the gall bladder, or pancreatic duct or by a blood vessel. In each of the author's five cases the fundus of the diverticulum was devoid of a true muscular wall but otherwise there was no abnormality of the wall. The most common abnormality of the diverticulum is a diverticulum.

[illegible]

The penetration of blood vessels into the muscular coats at points of weakness in the bowel wall and a pulsion force from within the bowel therefore can account for the formation of diverticula. Although several other theories have been advanced with regard to the cause of weakness of the wall the author believes that the most logical theory is that which takes into account the penetration of the vessels. The pressure within the bowel depends on two factors the contents and the muscular con-

the duodenum under certain circumstances the condition of the pylorus being a definite factor. In the jejunum it is necessary to postulate some irregularity in muscular action to explain some pressure in the lumen.

The symptoms of duodenal sufficiency distinct from those of the stomach with an

The symptoms of duodenal diverticula are not sufficiently distinctive to allow a clinical diagnosis with any degree of certainty. The only reliable method of diagnosis is X-ray examination. Great care must be exercised in attributing various vague digestive disturbances to diverticula discovered by X-ray examination because the presence of diverticula does not necessarily mean that the diverticula are causing symptoms. Hence complete gastrointestinal studies to rule out all other possible including disease of the gall bladder, complete gastroenteritis when X-ray examination is negative.

studies to rule out the diverticular disease of the gall bladder must be made. Only when x-ray examination shows barium retention in a diverticulum over a long period of time is it justifiable to conclude that the diverticulum is the cause of symptoms. Diverticula of the jejunum rarely cause symptoms unless they are complicated by infection, perforation or obstruction. Duodenal diverticula which are causing symptoms should be removed. The operation is a serious one. Removal of the sac and repair of the duodenal wall are sufficient. In multiple jejunal diverticula the affected jejunum should be removed.

A Contribution on the Etiology of True  
 Megaduodenum (F. H. Traut)  
 933 1 4 1

The author reports three cases of true megacolon.

The first case was that of a man thirty seven years old who had suffered for a gastric distress for seven years. Laparotomy disclosed an ulcer of the duodenal bulb. Roentgen disclosed an ulcer of the stomach below the bulb there began a marked dilatation of the entire duodenum as occurred with an equally marked diffuse duodenum associated with an anastomosis. The duodenum was petriophy of the duodenal wall. The duodenum was entirely intraperitoneal in its course and had a free mesentery. It was freely movable and could be withdrawn from the abdomen. No obstruction of the lumen was found. The dilated duodenum went over gradually without an intervening duodenal flexure into the jejunum which was on the right side of the abdomen. The jejunum also as dilated in its first part. There was a picture of mesenteric compression. The rectum was in the left side of the abdominal cavity. The colon anastomosis was done. The Billroth II method with a Braun

The second case was that of a man thirty seven years of age who had suffered for a gastric distress for seven years. Laparotomy disclosed an ulcer of the duodenal bulb. Roentgen disclosed an ulcer of the stomach below the bulb there began a marked dilatation of the entire duodenum as occurred with an equally marked diffuse duodenum associated with an anastomosis. The duodenum was petriophy of the duodenal wall. The duodenum was entirely intraperitoneal in its course and had a free mesentery. It was freely movable and could be withdrawn from the abdomen. No obstruction of the lumen was found. The dilated duodenum went over gradually without an intervening duodenal flexure into the jejunum which was on the right side of the abdomen. The jejunum also as dilated in its first part. There was a picture of mesenteric compression. The rectum was in the left side of the abdominal cavity. The colon anastomosis was done. The Billroth II method with a Braun

The second case was that of a man thirty-two years of age who had had gastric distress for two years. He had an ulcer on the lesser curvature of the stomach. The first part of the duodenum was un-

changed but the superior horizontal part was dilated to the size of the large intestine and was freely movable. There was no obstruction. The other findings and the treatment were the same as in the first case.

The third case was that of a boy eighteen years old who complained of vague pains, but refused operation. On roentgen examination the stomach and duodenal bulb were seen to be normal, but the superior horizontal part and especially the descending part of the duodenum were markedly dilated. Like the rest of the small intestine, they lay without a flexure on the right side. The descending colon was in the normal situation, but the rest of the large intestine was arranged in a series of loops and slings.

In these three cases there was an arrest of the development of the intestinal anlage which was associated with a marked dilatation of from 50 to 60 cm. and hypertrophy of the duodenum and the upper part of the jejunum. The arrangement of the intestinal loops represented the position characteristic of mesenterium commune. Similar observations are found recorded almost exclusively in anatomical records, being seldom mentioned in the records of operations. Roentgenograms of the condition are lacking. An etiology analogous to that of congenital megacolon cannot be considered for this part of the intestinal tract. An organic obstruction can be ruled out, and a functional disturbance cannot be assumed. The duodenojejunal flexure is the pivot around which the entire intestinal development occurs, and if the migration of the duodenum toward the left does not occur the spiral development of the intestinal anlage in general is defective, and mesenterium commune persists.

In the cases reported in this article it is striking that the dilatation and hypertrophy of the duodenum were found in association with mesenterium commune. In mobile duodenum which also is to be regarded as due to an arrest of development and becomes differentiated from mesenterium commune only gradually, the same changes are observed in the upper part of the small intestine. It is therefore very probable that the dilatation of the upper portions of the intestine is related to developmental disturbances of the intestinal anlage. However there is a difference between the dilatation of the duode-

Other duodenal diseases may also be associated with marked dilatation. Therefore the picture of mobile duodenum is varied and the result of operation is dependent upon the anatomical findings. When the dilatation is associated with atrophy, correction of the flexure is not sufficient and intramucosal duodenojejunoanastomosis must be done.

STEWART D.

Williams, B. W. and Boggon, R. H. The Mechanics of Appendicitis. *Lancet* 1934, 127: 919.

Two chief types of appendicitis are recognized—acute appendicitis, which is a definite and recognized disease, and chronic appendicitis, which is often viewed with some suspicion. In the acute form the disease is in reality an acute obstruction of the appendix in a large percentage of the cases.

The authors report a study of the pathological mechanics of appendicitis made in 108 cases in which the degree of necrosis of the appendix was not too far advanced to permit satisfactory microscopic study and 340 cases of chronic or recurrent appendiceal disease. In 38 of the latter there was a history of acute attacks.

Of the 108 cases of acute appendicitis acute obstruction of the lumen of the appendix was found in 97.2 per cent. This obstruction was the result of a pre-existing fibrotic stricture of inflammatory origin in the submucosa.

A fibrous stricture in the submucosa was found also in the cases of chronic or recurrent appendicitis. In the intervals between the acute attacks in such cases inflammatory cells may be completely absent. Chronic inflammatory appendicitis in the absence of a fibrous stricture has not been observed.

The authors conclude that the fibrotic stricture is not congenital but is due directly to infection elsewhere in the body. The infection leads primarily to a swelling of the lymphoid tissue in the submucosa of the appendix, with resulting narrowing of the lumen of the organ. Localizing signs of obstruction develop only when a true acute appendicitis is present.

JOHN W. NICHOL, M.D.

Suttall H. C. W. The Fallacy of Expectant Treatment in Acute Appendicitis. *Brit. J. Surg.* 1934, 21: 521.

fication for the assumption that delayed operation is best for cases of acute appendicitis seen two or three days after the onset of the condition.

The author outlines routine expectant treatment and exposes its serious disadvantages some of which he illustrates by examples from accounts of advocates of the method.

SAMUEL KAHN M D

#### Keyes E L Deaths from Appendicitis A

St L 1934 xcix 47

This article is based on 1 859 cases of appendicitis admitted to the Barnes Hospital St Louis and the St Louis Children's Hospital during the years from 1915 to 1922. Only the cases of patients who were operated upon for appendicitis or who died from appendicitis without being operated upon were included in the study. There were 62 deaths a mortality of 3.33 per cent. In the 1 479 cases admitted to the Barnes Hospital the mortality was 2.16 per cent and in the 380 cases admitted to the St Louis Children's Hospital it was 7.89 per cent. The mortality was highest at the extremes of life being 12.29 per cent in the cases of patients between one and nine years of age and 42.1 per cent in the case of patients between sixty and seventy-five years of age. It was lowest in the cases of patients in the third decade of life. The mortality of males was 5.18 per cent that of females 1.5 per cent that of negroes 6 per cent and that of white patients 3.13 per cent. Seventeen patients were operated upon during pregnancy with a mortality of 5.8 per cent.

The cases are divided into the following 6 classes: (1) those of chronic appendicitis; (2) those of chronic recurrent appendicitis; (3) those of subacute appendicitis; (4) those of acute unruptured appendicitis; (5) those of ruptured appendicitis with abscess; and (6) those of ruptured appendicitis with peritonitis.

There were approximately 400 cases in the first class, 300 in the next four classes and 100 in the sixth class. Most of the Barnes Hospital cases belonged in Classes 1 to 4 whereas most of the Children's Hospital cases belonged in Classes 4 to 6 showing that the process is much more acute in children than in adults. There were no deaths in the cases of Class 1. In those of Class 2 the mortality was 0.6 per cent in those of Class 3, 0.59 per cent in those of Class 4, 2.32 per cent and in those of Class 5, 7.3 per cent. In the Children's Hospital cases the mortality in the cases of Class 5 was 9.02 per cent whereas in the Barnes Hospital cases it was 6.2 per cent. In the cases of Class 6 the mortality was 27.55 per cent. In the cases of this class in the Children's Hospital it was 38.1 per cent and in those in the Barnes Hospital it was 19.6 per cent. When analyzed according to the time limit it was found that the mortality rapidly rose with delay. In the cases of patients who took a laxative the mortality was 17.6 per cent whereas in the case of patients who had not taken a laxative it was 2.38 per cent.

Mentioned in order of decreasing frequency the causes of death were general peritonitis, abscess of the peritoneum, intestinal obstruction, infection of

the operative wound, pulmonary embolism, myocardial insufficiency, pneumonia, pyelophlebitis, erysipelas, measles, asthma and leukæmia.

In discussing the ways in which the mortality of appendicitis can be decreased, Keyes emphasizes that appendicitis has a higher mortality under certain conditions than under others. The time at which operation is performed is of importance. Early diagnosis and early treatment should materially decrease the mortality. Removal of the appendix in the interval between attacks is recommended. Drainage of an appendiceal abscess should always be followed by appendectomy.

ALTON OCHSER M D

#### Wilkie D P D Cancer of the Colon Its Surgical Treatment L col 934 ccxv 65

In the past few years radiotherapy has been substituted for radical operative measures for cancer of such regions as the lip, tongue, mouth, cervix and breast. In cancer of the hollow viscera of the abdomen, however, operation is still the only means of cure. In cases of malignant tumors of the colon, which are common, the growth of the lesion is usually slow and lymphatic involvement occurs relatively late.

The author reports on 101 cases of carcinoma of the colon in which he was able to do a partial colectomy. In 74 the lesion was in the distal half of the colon, that is beyond the midpoint of the transverse colon and in 27 it was in the proximal half. The sites were as follows: pelvic colon, 51 cases; ascending colon, 15 cases; descending colon, 13 cases; transverse colon, 11 cases; cæcum, 5 cases; splenic flexure, 5 cases; and hepatic flexure, 2 cases.

In its early stages, cancer of the colon may produce few symptoms. If it is located in the pelvic colon it may cause occasional tenesmus, the passage of blood and mucus and some slight irregularity of the action of the bowel. A growth in the distal part of the colon is usually not associated with an appreciable loss of weight. In cases allowed to progress until complete obstruction has developed the most striking feature on examination may be swelling and tenderness in the right lower quadrant of the abdomen.

When the patient is seen first after acute obstruction had developed the immediate indication is drainage of the bowel above the obstruction by caecostomy. For free drainage the caecum must be brought to the surface and a tube of adequate size introduced. As tumors of the colon grow slowly, extirpation of the growth should be delayed for several weeks after the caecostomy.

The chief danger of resection of the colon is infection due to imperfect technique, inadequate preparation or leakage at the suture line.

The author attempts immunization by giving injections of bacillus coli and streptococcus eight and three days before the operation. To produce a leucocytosis on the morning of the operation he gives an intramuscular injection of 5 c.c. of a 5

per cent solution of nucleinate of soda the evening before

The technique should include complete mobilization of the involved portion of the colon so that the ends to be sutured will fall together without tension. If end-to-end anastomosis is decided on, the tania of the colon must be divided to get rid of the sacculations so that tension will be equal on all points of the circumference of the bowel. Interference with the blood supply of the approximated cut margins must be avoided as far as possible. If not already established, a cæcostomy opening should be made to prevent gaseous distention of the colon during the first week after the operation.

In the 101 cases reviewed by the author there were 15 deaths. CHARLES F. DU BOIS, M.D.

### LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Bržozowski, A. Contributions to Current Problems in Surgery of the Bile Passages Based on 165 Personal Observations (Beiträge zu Tagesfragen der Chirurgie der Gallenwege auf Grund von 165 eigenen Operationen) *Nov. chir. Arch.*, 1933, LVIII, 164.

The clinical concept of congestive gall bladder should probably be retained although it is necessary to exclude from the large number of supposed cases of this condition a not small number in which the diagnosis is erroneous—cases of gastric and duodenal ulcer, chronic duodenal obstruction, appendicitis, and kidney lesions. In the production of colic in the congestive gall bladder mechanical disturbances to the flow of bile, infection, and dyskinesia of a neuro-functional nature are the most important factors. After subtraction of the cases due to these factors there remains a smaller group which represents a transitional form between dyskinesia and cholelithiasis to which the term "congestive gall bladder" is most applicable.

The author's material confirms the opinion of others that in most cases congestive gall bladder is the initial stage of a stoneless cholecystitis, and that a sharp line of demarcation cannot be drawn between the two conditions. However it cannot be concluded from this that all cases of stoneless cholecystitis have their origin in congestive gall bladder. In some cases the congestive gall bladder and stoneless and calculous cholecystitis are successive stages of one and the same inflammatory process. There are also numerous cases in which the disease develops in the following sequence: dyskinesia, congestive gall bladder, stoneless and calculous cholecystitis. However, we must not generalize too much and consider every case of stoneless calculous cholecystitis as a stage of one and the same infection process. Stones may be formed without infection as the result of a disturbed chemism (cholesterin diathesis Bourhard, Aschoff) and the calculous form may change into the stoneless form after passage of the stones into the bowel.

As the gall bladder is the principal if not the only focus of infection, cholecystectomy should be performed whenever possible. Cholecystostomy should be done only in cases in which a more severe intervention is contra-indicated by the general condition or in which extensive and deep local changes render removal of the gall bladder impossible. In this procedure the common duct should be explored. Complete closure of the abdomen should be done if the common duct is patent, no acute virulent infection is present, and the cholecystectomy has been performed with a perfect technique—secure ligation of the stump of the cystic duct, good hæmostasis, and good peritonization of the operative field. Otherwise a small drain should be inserted.

Operation is indicated in the majority of cases of disease of the bile passages and should be performed as early as possible. Even a not absolutely necessary operation during the acute stage may be justifiable. In cases with few or no complications, cholecystectomy has a low mortality and a further lowering of the mortality and improvement of the end-results must be expected chiefly from early operations.

Postoperative colic and recurrence of pain are usually due to persisting infection. In spite of all the good results obtained, it appears that operative treatment does not always cure disease of the bile passages and a certain number of patients subjected to it must continue medical, dietetic, and balneological treatment afterward.

The author's material consisted of 153 cases—22 those of men and 131 those of women—in which 165 operations were performed. A history of typhoid was given in 45. The duration of the illness ranged from less than one year to thirty years. In 60 cases it ranged from one to five years. Of the 46 patients with acute cholecystitis—22 without stones—all were discharged cured, and of the 88 with chronic cholecystitis—31 without stones—4 died. Of the 13 patients with stone in the common duct, 4 died. Of 6 with obstructive icterus with chronic pancreatitis or a malignant tumor, 2 died. Of 2 with acute cholangitis, 2 with postoperative adhesions, and 2 with cancer of the gall bladder, 3 died. There was 1 case each of echinococcosis, rupture, and hydrops of the gall bladder.

In the diagnosis the author was aided most by duodenal sounding with study of the A, B, and C bile.

Cholecystectomy was done 115 times with 5 deaths, cholecystostomy 21 times with 1 death, choledochotomy 15 times with 4 deaths, cholecystogastrostomy 6 times with 3 deaths, separation of adhesions 5 times, exploratory laparotomy twice, and cysticotomy once. Of the 13 fatal cases, the cause of death was peritonitis in 3, cholæmic hæmorrhage, heart failure, and acute yellow atrophy of the liver in 2 each, and cholangitis, acute ileus, a lung complication, subdiaphragmatic abscess in 1 each. In the 136 cases in which cholecystectomy or cholecystostomy was done there were 6 deaths, a mortality of 4.4 per cent. The causes of these deaths

## INTERNATIONAL ABSTRACT OF SURGERY

were (1) late operation following rupture of the gall bladder (2) acute yellow atrophy of the liver following the use of poor chloroform (3) an overlooked stone in the papilla (4) stenosis of the duodenum below the papilla of Vater (5) an overlooked stone in the common duct and (6) operative injury of the stomach and duodenum in the separation of extensive adhesions.

Of 10 cases in which cholecystostomy was done the results were poor in more than 50 per cent (repeated operation in 7, recurrence of pain in 2, persistent fistula in 1). Many of the patients could not be traced. Of 63 cases in which cholecystectomy was done normal healing occurred in 40 (63.5 per cent), slight discomfort persisted in 16 (25.4 per cent) and no improvement resulted in 7 (11.1 per cent).

G. Aurov (2)

## MISCELLANEOUS

Pottenger F M Clinical Aspect of Abdominal Pain *J Am Med Ass* 1934 cu 341

Since the cell bodies of the afferent neurons that supply a given viscus are located in the same segments of the cord as the efferent neurons going to the viscus and since the cell bodies of the somatic motor and sensory nerves which express reflex action and referred visceral pain are located in the same segments a knowledge of the connector nerve supply of an organ makes known all of the skeletal nerves through which and the tissues in which reflexes from that organ will be most apt to be expressed. If reflex effects and referred pain spread they are most apt to be expressed by neurons arising either above or below in segments adjacent to those which the afferent impulse enters.

Following the lungs heart and aorta caudad in the cord the stomach liver gall bladder pancreas and small intestine are innervated from the fifth to the ninth thoracic segment but the skeletal caudal and referred pain is more or less distinct for each organ. The stomach expresses its pain most readily in the epigastrium in the median line and in the left side in areas supplied by the sixth and seventh thoracic spinal nerves whereas the liver and gall bladder express their pain most readily in the median line and on the right side. Posteriorly the pain may be expressed in the interscapular region through the fifth to the ninth dorsal spinal nerve on the left side from the stomach and on the right from the liver and gall bladder. The small intestine refers its pain most readily to the median line in areas supplied by spinal sensory nerves from the eighth ninth and tenth thoracic segments.

Next in order are the colon kidney ureter and bladder which are supplied by neurons arising in spinal segments from the ninth thoracic to the third lumbar. Pain from the colon is expressed most commonly through the eleventh and twelfth thoracic nerves over the lower part of the abdomen but may be expressed also in the first second and third sacral

segments. Kidney pain is reflected through the tenth eleventh and twelfth dorsal nerves and the first lumbar nerve both anteriorly over the abdomen and thigh and posteriorly in the lumbar regions. Ureteral pain is expressed both posteriorly and anteriorly.

Bladder pain is usually expressed through the eleventh and twelfth thoracic and from the first to the third lumbar segments although it may refer its pain also through sacral nerves. This brings it low down in the abdomen anteriorly as expressed through thoracic nerves and in the peritoneum and down over the leg through the sacral nerves.

In conclusion the author calls attention to the fact that all viscera with a vagal supply may transfer stimuli to the fifth cranial nerve and express pain in some of its peripheral branches.

JACOB M. MORAN, M.D.

Meyer H I The Reaction of the Retroperitoneal Tissues to Infection *Ann Surg* 1934 xc1 46

An attempt was made to determine whether or not infections of the retroperitoneal tissues have a higher mortality than infections of the peritoneum. The early work of Wegner demonstrated that death may occur from the absorption of toxins before reactive factors can be set in action that is before peritonitis can develop that small numbers of bacteria may be destroyed before they can do harm and that stagnating fluid in the peritoneal cavity favors the development of bacteria.

In the author's experiments two types of organisms were used the staphylococcus aureus and the bacillus pyocyaneus.

Intraperitoneal and retroperitoneal injections were made at the base of the gall bladder and complete necropsies were performed as soon as possible after the animals died. The animals that apparently recovered from the effects of the injections were killed after twenty days and also subjected to necropsy.

In the animals receiving the intraperitoneal injections the clinical reaction was distinctly different from that occurring in the animals receiving the retroperitoneal injections. Within a few hours the intraperitoneal injections as followed by marked illness a decided rise in the temperature loss of the desire to eat and drink nausea vomiting irritability diarrhea (in several instances) and prostration. Following the retroperitoneal injection there was no apparent reaction of acute toxemia but after gradual deterioration from the operation there was a which was accompanied by loss of the animal's condition and drink occasional vomiting increasing diarrhea and loss of weight leading to extreme emaciation and death.

The only deaths following the intraperitoneal injections were immediate deaths from toxemia. In three of five animals dying from toxemia the peritoneum was sterile and no abscesses or signs of peritonitis could be found. Of the animals receiving

retroperitoneal injections, one-third of those given injections of staphylococci and three-fourths of those given injections of pyocyaneus bacilli developed abscesses. All of those developing abscesses died. It therefore seems apparent that the retroperitoneal tissues are less resistant to the invasion of bacteria than the peritoneum.

The findings of these experiments have a direct clinical application to the burying of infected stumps, as after cholecystectomy and appendectomy. In the author's opinion, many postoperative abscesses attributed to this cause would not occur if the infected stump were allowed to come into contact with the peritoneum instead of with the retroperitoneal tissues, which have less resistance.

NORMAN G. PARRY, M.D.

Stepp, W., and Boeger, A. A Contribution on Certain Rare Abdominal Tumors, with Special Consideration of Retroperitoneal Sarcomata (Beitrag zur Kenntnis einiger seltenerer Bauchtumoren unter besonderer Beruecksichtigung der retroperitonealen Sarkome) *Muenchen med Wchschr*, 1933, 11, 1362.

An accurate X-ray examination reveals clearly, in almost every case, the condition of the gastrointestinal tract and shows whether an abdominal tumor is within or outside of this tract. The authors report an unusual case of chronic invagination of the ileum due to a lipoma the size of a hen's egg in the lowest part of the ileum. They then report a case of myoma of the stomach which was the size of a child's head.

Too strong previous purging is often more disadvantageous than no preparation at all because the intestine is often thereby filled with air. In icterus with closure of the efferent bile ducts the observation of Courvoisier's symptom has proved of great importance. An easily palpated gall bladder in a case

of long-standing icterus very often indicates a carcinoma of the head of the pancreas. Cystic tumors of the kidneys and the efferent urinary passages, and especially tumors of the ovary, may cause certain diagnostic difficulties, particularly when they are large tumors extending to the liver. Large intestinal tumors and periappendicular abscesses can generally be recognized easily and pancreatic cysts usually cause no difficulties. Occasionally the possibility of an aneurism of the aorta must be considered.

The differentiation of cystic tumors of the pancreas from the often cystic and soft retroperitoneal tumors of the sarcoma type may be difficult. Systematic X-ray examination is of decisive value. Pyelography is especially important because it reveals displacement of the kidneys or other changes brought about by the pressure of a retroperitoneal tumor. The symptoms of retroperitoneal sarcoma are at first very indefinite, consisting of fatigue, loss of strength, loss of weight, and indistinct local troubles. Only when the tumor becomes so large that it is palpable do the local difficulties become more severe. The tumor then causes pressure on the large nerves and vessels, congestion, obstipation, and enlargement of the veins. In the differential diagnosis it is necessary first to consider tumors of the kidneys and adrenals. An examination in the knee-elbow position sometimes yields further information. Next, it is necessary to eliminate pancreatic, hepatic, and mesenteric cysts, Braun tumors, peritoneal indurations, and echinococcosis of the liver and kidneys. Lymphogranuloma and lymphosarcoma of the retroperitoneal glands must also be considered in the differential diagnosis. Decisive findings with regard to these conditions are the condition of the blood, swellings of other lymph glands, and tumor of the spleen.

LAPPEINER (Z)

# GYNECOLOGY

## UTERUS

Healy W P. Radiation Therapy in Carcinoma of the Corpus Uteri. *Am J Obst & Gyn* 1934 xiv:1

Healy states that despite the fact that hysterectomy is regarded as the treatment of choice for carcinoma of the corpus of the uterus there are many cases in which it would be associated with grave risk of a fatal outcome because of complicating conditions. He reviews 132 cases as follows:

Grade 1 papillary adenoma malignum 14 cases. The growth is entirely papillary. It may not be superficial but as a rule does not tend to infiltrate the myometrium. It resembles adenomatoid endometritis and the cells show very little change from the normal. Of the 14 patients whose cases are reviewed all are alive and well. Three were treated by irradiation alone and 7 by the intra uterine application of radium followed by hysterectomy after from six to ten weeks. Three who were treated by hysterectomy followed by X ray therapy have survived for five, five and seven years respectively. One patient was treated by hysterectomy preceded and followed by radium therapy.

Grade 2 adenoma malignum 58 cases. This lies on is commonly found in a situation with fibromyoma. In 17 of the 58 cases reviewed the treatment was limited to irradiation and of the patients treated by irradiation alone 74 per cent are alive. The average duration of life since the treatment is five and three tenths years. The patients who died were in an advanced stage of cancer when they were first seen. Of the 31 patients treated by hysterectomy with or without irradiation 93 per cent are living. Of the entire group 84.5 per cent are living from one to fifteen years since the treatment.

Grade 3 adenocarcinoma 44 cases. Twenty one of the patients received only irradiation therapy consisting of the intra uterine application of radium and the external application of X ray irradiation to the entire pelvis. Their average age was fifty nine and six tenths years. Fifteen are alive and have been well for an average of four years. The 6 who died were given only palliative treatment as they had metastases at the time they were first seen. Of the 14 who were treated by irradiation followed by hysterectomy 57 per cent have remained well for an average of five years. Of the 9 treated by hysterectomy followed by irradiation only 33 per cent have survived for an average of three and a half years.

Grade 4 cellular (anaplastic) adenocarcinoma 8 cases. Despite the extremely malignant histological characteristics of this lesion the patients in this group progressed fairly well when irradiation was an

important part of the treatment. Two patients each sixty eight years of age who were treated by intra uterine applications of radium have remained well and free from evidence of recurrence for two and seven years respectively. Three patients treated by irradiation followed by hysterectomy are alive but 1 of them at the present time has clinical and X ray evidence of a metastasis in the chest one year after the operation.

Adenocanthomas 3 cases. Of the patients with this condition all are alive except 1 who died from an undetermined cause two months after hysterectomy.

In the 132 cases there was no operative mortality.  
EDWARD L. CORNELL M.D.

## ADNEXAL AND PERIUTERINE CONDITIONS

Mandelstamm A. Conservative Operations on the Fallopian Tubes. Full Term Normal Pregnancies After Bilateral Tubal Implantation and After Bilateral Tubal Rectification. *Zeitschrift für Geburtshilfe und Gynäkologie* 1933 p. 2152.

With a good technique it should be possible to obtain permanent permeability of tubs implanted into the uterus in 100 per cent of the cases. Even under such conditions however the possibility of pregnancy is not assured. Regardless of the reports of French gynecologists the frequency of pregnancy after tubal implantation does not greatly exceed 10 per cent.

After reporting a case of pregnancy following tubal implantation the author calls attention to certain factors which are important for successful results from the operation. He states that the prognosis is much better when only the isthmus portion of the tubes is occluded than when the ostium is also involved and salpingostomy is necessary. It is better also in occlusion due to non specific infections or chemical irritation (injection of diac) than in occlusion due to gonorrheal infection. Splicing (reformation) of the tubal end to be implanted is important. The canal in the uterine wall is best made by circular excision. The longer the implanted tube the better the chance for a successful result as the isthmus portion of the tube even if only partially preserved apparently plays an important part in the transportation of the ovum.

The author reports a case of normal pregnancy in a woman who was twice operated on for extrauterine pregnancy. One tube was removed. At operation for the second tubal pregnancy the author removed only the pregnant part of the tube and made a new ostium of the 2 cm stump. An extra

uterine pregnancy occurs very rarely in a stump that has been left, he recommends for the childless woman the conservative tubal operation described by von Ott, which consists of splitting of the tube removal of the products of conception and suture of the tubal wall

FROELICHT (G)

Vernet, E. G. The Innervation of the Ovary from the First Stages of Its Development (*Contribución al estudio de la innervación del ovario desde sus primeros estadios evolutivos*). *Rev. med. de Barcelona*, 1933, 7, 402

The author describes in detail and shows by photomicrographs the findings in animal and human ovaries in various stages of embryonic development. He investigated particularly the origin and the distribution of the nerve fibers and attempted to determine whether there are nerve ganglia within the ovary.

He found that the nerves supplying the ovary originate from the pre-aortic ganglia at the level of the kidneys. In early embryonic life the ganglia from which the nerves for various organs originate are here crowded together in a very small space. These ganglia are derived from the sympathetic cord, and the ganglia for the different organs are closely connected with each other. Passing through them are also sensory fibers from the spinal nerves which furnish the sensory nerve supply of the ovary. The nerves enter the ovary in the lateral part of the hilus. The center of the hilus is occupied by the vessels.

From a careful study of a series of sections of the ovary of an embryo ten days old which were stained with pyridin and silver nitrate the author concludes that ganglia are present within the ovary.

ANDRÉ GOSSE MORGAN, M.D.

Spivack, M. Polycystic Ovaries in the Newborn and Early Infancy and Their Relation to the Structure of the Endometrium. *Am. J. Obst. & Gynec.*, 1934, LXVI, 157

The material on which this report is based consisted of thirty-six specimens. The ages of the subjects from which the specimens were obtained ranged from the seventh month of fetal life to the seventh month of extra-uterine life.

Cystic follicles were found in 30 per cent of the entire number of specimens. In the majority, the granulosa was pycnotic. Karyolysis, karyorrhexis, partial autolysis of both nucleus and protoplasm, and vacuoles were observed. The granulosa layer was most often detached from the cyst wall and free within the cavity.

In only a few cases had the theca interna acquired the characteristics of theca lutein cells. No ovum was found in the large cysts. Primordial follicles were present in all of the specimens. Growing and maturing follicles were found in all but seven specimens. Polyovular follicles and polynuclear ova were observed. Vascularity of the ovaries was common.

Hyperplastic endometrium was found in five of the newborn infants. Its incidence was therefore 11 per cent in the whole group and 22 per cent in the newborn infants, including both those born prematurely and those born at term. In no instance was distinct hypertrophic and hyperplastic uterine mucosa found in the older infants, but in one case very mild stimulation was noted.

The coexistence of polycystic ovaries and hyperplastic endometrium was observed only in two newborn infants. Polycystic ovaries were found in 85 per cent of the infants, but in only 13 per cent of the newborn infants and in only 25 per cent of the newborn infants which were born at term. Polycystic ovaries in infants three weeks old and older were usually not associated with hypertrophic and hyperplastic endometrium. There seemed to be no causative relationship between cystic follicles of the ovaries and the structure of the endometrium in the newborn and older infants.

The greater predominance of polycystic ovaries in older infants than in newborn infants suggests that cystic degeneration of the follicles may be of extra-uterine origin and dependent upon activity of the pituitary gland of the infant.

EDWARD I. CORNELL, M.D.

## EXTERNAL GENITALIA

Tadden, A. A Contribution to the Study of Cysts of the Duct of Bartholin's Gland (*Contribución al estudio de los quistes del ducto de la glándula de Bartolino*). *Cir. y G.*, 1933, 10, 100.

The author reviews the literature on cysts of the duct of Bartholin's gland and reports eight cases.

He accepts the classification of Pezzer, Forgue, and Massabial who recognize the following three distinct types of cysts: (1) superficial cysts occurring as dilatations of the excretory ducts of the vulvovaginal glands, (2) deep cysts which involve the lobules of the gland proper and are sometimes referred to as "acinous cysts," and (3) accessory vulvovaginal gland cysts which develop beneath the mucosa of the vestibule.

The superficial cysts are the most common. All of the cysts in the author's cases were of this type and were cystic dilatations of the excretory duct. In six of the cases the cyst was situated in the labia majora, and in two in the labia minora. The size of the cysts varied from that of a nut to that of a hen's egg.

The deep cysts are relatively rare and are often much larger than those of the other types. In Chourakine's case the gland reached the level of the knee, and in Mangagoli's case 2 liters of fluid were aspirated from the cyst.

Microscopically, all cysts of the vulvovaginal glands can be shown to consist of three fairly well defined layers—an outer loose connective tissue layer richly supplied with blood vessels, a middle compact fibrous layer, and a lining epithelium. The character of the lining epithelium depends upon the



point of origin of the cyst the cells therefore varying from the stratified squamous to the cylindrical type. As these cells are subject to considerable modification by pressure and inflammatory changes areas of greater or less destruction and alteration of the epithelium may be encountered throughout the microscopic sections.

The cause of the cysts is still obscure but infection and trauma seem to play a part in their development. The author believes that the pathogenesis is dependent not only on stenosis or obstruction of an excretory duct but also on the functional activity of the gland. **GEORGE C. FIORE, M.D.**

### MISCELLANEOUS

**Araya R. Ovulation and Menstruation (Ovulation et menstruation). S. Ed. 933. 1. 549. 74.**

The author made a very exhaustive study of the relation between ovulation and menstruation in the cases of 464 women operated on at different stages of the menstrual cycle and during pregnancy, lactation and metrorrhagia. He made careful microscopic studies of the corpora lutea and of the uterine mucous membrane. His findings are shown by photomicrographs.

Contrary to the generally accepted opinion, Araya found that there is no definite chronological relationship between the rupture of the follicle and the beginning of menstruation. He demonstrated that ovulation and menstruation are two separate functions independent of each other. In many of the cases reviewed menstruation took place when there was no corpus luteum and no mature follicle. That women may have mature corpora lutea without menstruation is shown by the cases of young girls who have become pregnant before menstruating. Mature corpora lutea have been demonstrated surgically in women who were not menstruating. Absence of the uterus does not prevent ovulation as has been shown in women after hysterectomy and in congenital absence of the uterus. That neither the corpus luteum nor the follicle determines menstruation is shown by the fact that menstruation takes place when they are removed artificially. Menstruation is sometimes stopped or delayed by operation when the corpus luteum is in full development. Menstruation is sometimes brought on by emotional causes at a period quite different from the normal one. The menses may be stopped by tuberculosis or other diseases without preventing pregnancy. Changes are brought about in the menstrual rhythm by metrorrhagia and other conditions without interfering with normal ovulation.

Araya concludes that menstruation is a rhythmic cal phenomenon occurring only in man and the higher primates and is not the same as rut in the lower animal. It is subject to hormonal influences as is ovulation but the two processes are not dependent on each other chronologically. Therefore there is no

greater probability of fecundation at one period of the menstrual cycle than at another and it is impossible to set any definite date for the termination of a pregnancy. The corpus luteum cannot be considered the sole cause of certain menstrual disturbances. In the treatment of menstrual disturbances such as amenorrhea and hypomenorrhea total ovarian extract may be given with or without extracts of other endocrine glands.

**AUDREY GOSS MORAN, M.D.**

**Shaw W. Ovulation and Menstruation. B. J. M. J. 934. 7.**

The normal menstrual cycle is believed to be twenty-eight days; the first day of the period of bleeding being counted as the first day of the cycle. The ovaries on which the author's studies of ovulation were made were obtained from 36 women with a twenty-eight day cycle. They were removed at operation for such gynecological conditions as fibroids and myohyperplasia. In all cases the first day of the last menstrual period, the date of the operation and the patient's normal cycle were recorded.

Of the thirty-six cases specimens of a recently ruptured follicle were secured in six. In all of the latter the classical signs of recent rupture were found. There was extreme hemorrhage in the theca interna layer and the granulosa cells were both proliferating and undergoing hypertrophy. The corpus luteum convolutions had not yet formed. Four specimens were obtained on the thirteenth day and two on the fifteenth day of the cycle. These six specimens of recently ruptured follicle suggested that ovulation had taken place at about the fourteenth day of the cycle. Among the thirty cases in which the specimen was obtained after the thirteenth day there was none in which the ovaries did not contain either a recently ruptured follicle or a proliferating corpus luteum or a mature corpus luteum. The later in the cycle that the specimen was removed the more mature was the corpus luteum. Proliferating corpora lutea were found particularly at about the seventeenth day. In specimens observed in the early part of the cycle no recently ruptured follicles were seen and the corpora lutea detected in the ovaries were retrogressing.

Specimens showing recently ruptured follicles indicate quite clearly that there is little variation in the time of ovulation. It is probable that ovulation occurs more than two days from the fourteenth day of the cycle, hardly earlier if it occurs in the human female.

In weighing the evidence against the theory of Teacher and Corner who have reported well authenticated cases in which the corpus luteum was found at autopsy in the ovaries of women who had been menstruating regularly, Shaw states that in his opinion such cases must be very exceptional and should be regarded as pathologic. In the ovaries of women with normal menstrual cycles which were studied by him regularly, ovulation could be demon-

strated. He therefore believes that ovulation should be regarded as an essential part of the sex cycle of the human female.

In the studies reported, seventy specimens of endometrium were examined. The material consisted of sections through the entire thickness of the uterus, including both endometrium and myometrium. The proliferative phase consisted of a diffuse hypertrophy of the endometrium without departure of the glands from their simple tubular form. One of its most striking features was the onset of oedema and hemorrhage into the stroma of the endometrium. This was demonstrated as early as the seventh day of the cycle. Within forty-eight hours of the cessation of menstrual bleeding, repair of the surface epithelium was complete and proliferation had developed. The secretory phase of the endometrium, during which the glands become crenated and accumulate secretion, is restricted to the latter half of the menstrual cycle. One of the early signs of the secretory phase is the appearance of translucent areas behind the nuclei of the cells of the glands. These areas were found on the seventeenth day of the cycle and in some cases could be demonstrated as late as the twenty-first day.

The investigations indicate that after the fourteenth day of the cycle specific changes take place in the functional layer of the endometrium, changes which are never seen at an earlier stage of the menstrual cycle. If it is assumed that these specific changes are induced by the corpus luteum formed from the follicle which has ruptured, the time of ovulation can be deduced. On this basis the time of ovulation can be determined roughly. The findings reported prove that the specific crenations and the bright areas in the cells of the glands are never found before about the fourteenth day, and do not become well marked until the seventeenth day. A study of the endometrium alone, without knowledge of the changes in the ovaries, would lead to the conclusion that some factor that was responsible for the secretory phase of the endometrium was introduced at about the fourteenth day of the cycle.

Of the seventy specimens of endometrium examined, thirty corresponded to the time between the fourteenth and twenty-eighth days of the cycle. Without exception they showed the typical premenstrual hypertrophy of the secretory phase. In specimens removed before the fourteenth day there was no premenstrual hypertrophy.

Shaw states that menstruation is the disintegration of a hypertrophied premenstrual endometrium in a cycle which is essentially ovular. He thus differs from Comer, Hartmann, and Novak who postulate that cyclical uterine bleeding of any kind, whether ovular or anovular and whether occurring in man or primates, may be called "menstruation." From a review of reports of anovular bleeding in the American literature Shaw concludes that almost all of the reports are valueless as the evidence is unreliable and the discussion uncritical.

CHARLES BARON, M.D.

Lecloux, J., and Carez, C. Menstrual Fever in Tuberculous Women (*à propos des fièvres menstruelles chez les femmes tuberculeuses*). *Rev. belge d. sc. méd.*, 1933, 1, 609.

For a long time it has been known that women occasionally develop a slight elevation of temperature immediately before the onset of menstruation, and that in tuberculous women the elevation is considerably greater. In an article published in 1925, Leuret and Crausson stated that they were able to determine the prognosis from the menstrual temperature curves. Their findings may be stated briefly as follows:

1. Stabilized lesions. The temperature curve is normal, that is to say, there is a premenstrual elevation of the temperature followed by a fall during the period of the menstrual flow. As the lesions tend to become arrested, the reaction becomes more feeble.

2. Progressing lesions. There is an increase in the amplitude of the thermic oscillations with an increase in the average temperature during the flow. In some cases there is a postmenstrual reaction. This always coincides with extension of the lesion.

3. During a period of transition between amelioration and aggravation of the lesions (in either direction) there is a widely oscillating hyperthermia during the menstrual flow.

Numerous authorities reject these findings or interpret the temperature curves differently.

This article is based on 309 cases and 871 menstrual periods. The authors conclude that in tuberculous the temperature shows exaggerated fluctuations during the menstrual period, and that the fluctuation is especially marked in patients with progressive lesions. When the lesions are stabilized, menstruation seldom alters the temperature curve. The degree of menstrual variation of the temperature varies directly with the rapidity with which the lesions are progressing. During treatment by rest alone or with pneumothorax a return to a normal temperature curve coincides with arrest of the lesion. Improvement in the general health is not sufficient to bring the temperature curve to normal if lesions in the process of extension persist. Both the serious accidents usually associated with tuberculosis and the minor and major accidents associated with artificial pneumothorax occur most often at the onset of menstruation.

ALBERT T. DE GROAT, M.D.

Thompson, W. P. Observations on the Possible Relation Between Agranulocytosis and Menstruation, With Further Studies on a Case of Cyclic Neutropænia. *New England J. Med.*, 1934, ccc, 176.

Of eighteen cases of agranulocytosis studied by the author, the onset of the subjective symptoms of agranulocytosis occurred within one or two days of the onset of the regular menstrual period in seventeen. One or more recurrences of the agranulocytosis were observed in six of the eighteen cases and each recurrence appeared coincident with menstruation.

In two young women for whom frequent blood cell counts were made through a menstrual period a definite neutropenia occurred four or five days before the onset of menstruation. There were no subjective symptoms associated with the neutropenia.

A study of the excretion of the female sex hormone and prolactin by a man of twenty-five years whose record was well known from the age of two and a half months revealed that at times he excreted an enormous amount of female sex hormone and that there was an apparent fluctuation in the ovarian hormone closely following the fluctuation in these hormones found by Frank and Goldberger in the blood of normal menstruating women. Neutropenia occurred in this young man after a drop in the female sex hormone or hormonal catamenia.

The author concludes from his observations that in some cases of agranulocytosis a relationship between the hormones associated with menstruation and the neutropenia episodes is possible.

A. I. L. SM. MD

Jackson H. Jr. Merrill D. and Duane M. Agranulocytic Angina Associated with the Menstrual Cycle. *New England J. Med.* 1934 cc 175

The authors report a case of agranulocytosis in which an intimate relation between the onset of menstruation and the recurrence of an attack was observed. On the basis of Thompson's findings and the close relationship observed between menstruation and recurrence of the disease, 2 cc of Antutrin B were administered daily for ten days prior to menstruation. For the first time in eleven months the total polymorphonuclear neutrophils showed a sharp rise the first day of menstruation and reached a level which was higher than at any time during the preceding seven months. Further observations were impossible because the patient died of a severe infection of the upper respiratory tract. The authors believe that the result in this case, although not conclusive, warrants further trials with the hormone.

A. F. LASH. MD

Daniel C. and Mordecai D. Genital Actinomyces in the Female (Lactomyces genitalis de la femme). *Refr. et Gy. et Obstet.* 1934 1

The authors give an extensive review of the literature on genital actinomyces in the female and abstracts of the histories of 66 of the 77 cases which have been reported to date.

The patients whose cases are reported in the literature ranged in age from fifteen to sixty-four years, but the majority were between twenty-five and forty years, the period of sexual maturity. The puerperium also seems to be a period of increased susceptibility, although in some cases pregnancy coincided with regression of the process. Trauma may act directly by bringing the organisms into direct contact with the tissues or indirectly by causing tissue damage and providing conditions favorable for the growth of the parasites. The effect

of occupation is seen in the greater incidence of the condition among field workers who come into contact with grain. The general state of health seems to be of little importance as most of the patients whose cases have been reported were women in seemingly good condition.

Accurate statistical evidence of the incidence of genital actinomyces is impossible to obtain as the condition is often unrecognized. In the authors' clinic a case of adnexal actinomyces was found in a series of 1204 laparotomies. The condition is observed 36 times less frequently than utero-adnexal tuberculosis. In contradistinction to genital tuberculosis actinomyces most frequently involves the ovary. Next most commonly affected by it are the tubes. Isolated involvement of the uterus or external genitalia is rare.

Primary genital actinomyces has been reported only 6 times. Secondary genital involvement is the most frequent type, occurring in 67 of the 77 known cases.

It is generally conceded that the digestive tract is the most common point of origin. Primary lesions being present in the small intestine, cecum, appendix and rectum. Extension may take place either directly by way of peritoneal adhesions or by the hematogenous or lymphogenous routes. The pathogenic agent, the actinomyces bovis, is a vegetable parasite. It varies in its appearance in diseased tissue and in its supporting tissues it is a yellow body of variable dimensions surrounded by a peripheral zone of radiating bars. In cultures it consists of irregularly ramified filaments of variable size.

The macroscopic lesions of actinomyces are characteristic wherever their location. The granulations are present in colonies and develop according to 1 of 2 types of lesions: a suppurative or neoplastic type depending upon the reaction of the invaded tissues. Microscopic examination of the tissue is necessary for diagnosis.

The symptoms vary according to the location of the lesion. In the majority of cases they are poorly defined, but occasionally the peritoneal symptoms are of such severity as to resemble those of other acute inflammatory processes. The onset when acute is accompanied by abdominal pain, vomiting and fever. In other cases some complication such as perforation of the urinary bladder may be the first sign. The most constant symptom is pain, which is chiefly abdominal and either constant or colicky. Leucorrhoea is almost always present. Metrorrhagia is rare although menstrual disturbances are frequent. The latter include amenorrhoea, oligomenorrhoea, menorrhagia, irregular menstruation and dysmenorrhoea. Diarrhoea or constipation may be present in association with vomiting. Dysuria with or without pyuria has been noted. Temperature elevated fluctuating between 37.5 and 41 degrees C occurs in all cases.

In spite of the indefinite character of the functional and general symptoms, definite signs of actinomyces

cosis become manifest sooner or later. Tumefactions of the cæcum or adnæva are then noted. The development of fistulæ is characteristic of advanced stages of the disorder. Laboratory examinations reveal the parasites in the pus. Cultures are difficult to obtain because of secondary infection. There is usually a pronounced leucocytosis, the white cell count ranging from 10,000 to 34,000. Secondary anemia is always present. The sedimentation time is increased.

In cases of closed actinomycosis the diagnosis is impossible. In open cases it is less difficult because of accessibility of the lesions and exudates.

Anatomical cure by medical or surgical treatment is possible but unusual. As a rule the condition extends to adjoining structures with the formation of internal and external fistulæ. Dissemination through the blood stream has been noted. Lymphatic extension is rare. Recurrences necessitate repeated removal. Secondary infection is common. Up to the present time there is no record of pregnancy following genital actinomycosis. Pregnancy, labor, and lactation appear to aggravate the disease.

The prognosis of genital actinomycosis is extremely unfavorable. A definite cure has been obtained in only 7 cases and amelioration in only 4. In all of the other reported cases the condition was fatal. The immediate surgical mortality, even after

conservative operations, is high, and the late mortality is 80 per cent. While surgery is the ideal method of treatment, complete removal is seldom possible. Medical treatment with iodide preparations given internally and applied locally is an important phase of the treatment even when surgery is to be employed. In some cases foreign protein therapy and vaccinothérapie have been beneficial. Heliotherapy and radiotherapy are regarded by the authors as of questionable value although some gynecologists claim good results from their use.

HAROLD C. MACK, M.D.

Phillips, C. H., and Douglass, M. D. Tumors of the Urethra. *Am J Obst & Gynec*, 1934, 22, 11, 99.

Urethral caruncles of the vascular type tend to recur and may reappear as hemangiomatous tumors which are locally malignant and difficult to eradicate.

The presence of chronic infections or caruncles seems to be the precursor of urethral neoplasms.

Early diagnosis of carcinoma of the urethra is of the greatest importance because delayed operative treatment is extremely unsatisfactory.

The treatment of choice is surgical excision followed by an adequate plastic procedure. Radium is difficult to apply and extremely likely to cause an incurable vesicovaginal fistula.

EDWARD L. CORNELL, M.D.

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Dippel A L The Death of the Fetus in Utero B M J 1934 1 4

The author reviews a series of 305 cases of intra uterine fetal death occurring between the twenty eighth week of gestation and term. The incidence was 1 per cent. Mentioned in order of decreasing frequency, the most common causes were syphilis, a loop of the cord about a fetal part, intra-uterine maternal disease and trauma to the pregnant abdomen.

The majority of the fetal deaths occurred some weeks before the estimated term and in 75 per cent of the cases the fetus was retained up to 14 weeks before term. The longest period of retention was sixty one days. However when the death was due to toxæmia of pregnancy spontaneous emptying of the uterus occurred earlier and the labor was usually more rapid.

The author discusses the well known signs and symptoms of intra-uterine fetal death. He advises induction of labor only when there is a complicating factor such as toxæmia or the mother's mental condition is disturbed by knowledge of the death of the fetus.

Except when the fetal death is due to syphilis or nephritis the chances of intra-uterine death of the fetus in a subsequent pregnancy are apparently not increased. In the cases reviewed the maternal morbidity was 35 per cent as compared with the morbidity of 17.75 per cent in general clinic cases. There were 4 maternal deaths—2 due to pulmonary complications and 2 to pelvic infection.

Snyder P F The Prolongation of Pregnancy and Complications of Parturition in the Rabbit Following the Induction of Ovarian Nerve Term B M J 1934 1 4

In a series of 59 consecutive pregnancies rabbits were treated at varying stages of pregnancy with variable doses of pituitrin S or extract of urine. Some of the animals aborted completely on the second or third day after the treatment, some aborted part of the litter and others near to postpartum and gave birth to typical postpartum fetuses. None of the rabbits treated delivered at term. Abortions of the entire litter was more common in the cases of the primiparae and in every instance the abortion occurred on the second or third day after the injection.

In the rabbit it is possible to produce a malformation of the corpus luteum during pregnancy. This was done by the

injection of the Antuitrin S. In the animals that did not abort on the second or third day after the injection emptying of the uterus occurred fifteen days after the injection. The period of fifteen days coincided with the life cycle of the corpus luteum in the rabbit.

In normal rabbits a small dose of pituitrin at term is sufficient to induce labor but in the series reviewed a dose of pituitrin 1000 times as great as normal would not induce labor if the injection of Antuitrin S was given less than fifteen days before term. The effect of the experimentally produced corpus lutea inhibited even the action of pituitrin at term. Apparently neither overdosage of the uterus nor the condition of the fetus played a part in the induction of labor.

From these studies the author concludes that in the rabbit the retention of the fetus in the uterus is under hormonal control. HENRY SACKEN JA M D

Rao G T The Effect of Mastectomy on the Capacity for Conception of the Cow and the Effect of the Removal of the Uterus After Delivery (In the case of the cow) B M J 1934 1 4

From the study of the relationship between the mammary glands and the female genital organs many important observations have been reported. With the use of transplants of ovarian tissue Athias and Steinach and Sand were able to produce a definite hypertrophy of the breasts in male animals. Calabro and Fantozzi found that ovarian hormones have a decided inhibitory influence on lactation. Dixon and others by subjecting lactating animals to ovariectomy succeeded in increasing the secretion of milk. Fedorow and others employing mammary extracts were able to produce marked atrophy of the ovaries. A number of investigators have been able to cause mammary hypertrophy in young animals before and after puberty and in casted male and female adults by means of follicular hormones.

The author's study of the effect of mastectomy on conception, pregnancy and the involution of the uterus after delivery was made on three groups of rabbits—Group 1 twenty non-pregnant rabbits, Group 2 twenty-one pregnant rabbits and Group 3 other rabbits that had been delivered. Group 1 included ten virgin rabbits and ten adult rabbits which had previously given birth to one litter of young. All were subjected to bilateral mastectomy under ether anesthesia and on the eighth postoperative day were placed in a cage with no male males. After four months two normal litters were

added to the cage for controls, and in the sixth month all of the animals were sacrificed.

At necropsy, only the two controls were found pregnant. In six of the rabbits subjected to mastectomy both ovaries showed numerous cystic formations, and in all of them the adrenal glands were very much smaller than in the controls. Microscopic studies of the ovaries of the rabbits operated upon revealed atrophy, scarcity of mature or nearly mature follicles and corpora lutea relatively numerous atretic follicles, and in many places degenerative changes in the primary follicles with alteration of the granulosa cells and cells of the ovum. In the uterus there was very little change in the muscular layers, but degenerative lesions were found in the mucosa and blood vessels.

Group 2 consisted of twelve rabbits in the first month of pregnancy and nine which were approximately fifteen days from term. These were subjected to mastectomy by the same technique. Nine of the twelve rabbits in the early stages of pregnancy aborted from ten to fifteen days after the operation, expelling dead fetuses. Two continued their pregnancy to term. The nine rabbits in the late stages of pregnancy went to term and gave birth to normal offspring. These rabbits were kept alive and included in Group 3.

Group 3 consisted of the animals in the preceding group that went to term and ten rabbits which were subjected to mastectomy after delivery. At necropsy, which was done at varying intervals of the puerperium, the pathological findings in the ovaries and adrenals corresponded quite closely to those in the other groups. In the uteri, macroscopical and microscopical examinations showed that the process of involution was retarded in both the animals operated upon during pregnancy and those mastectomized after delivery. Grossly, the uteri were large, edematous, and doughy in consistency. On microscopical examination the muscularis was found atonic and the blood vessels were seen to be dilated and filled with blood.

The author draws the following conclusions:

- 1 Extirpation of the mammary glands has a definite inhibitory effect on conception.
- 2 Extirpation of the mammary glands early in pregnancy very often causes abortion.
- 3 Extirpation of the mammary glands has a marked influence on the process of involution of the uterus after delivery.
- 4 Although it is difficult to apply the findings in animals to human beings, it appears that the results in animals are not far removed from those that may obtain in the human female.

GEORGE C. FINOLA, M.D.

Gibberd, G. F. The Significance of Recurrence in the Late Toxæmias of Pregnancy. *J. Obst. & Gynec. Brit. Emp.*, 1934, xli, 23.

Nearly all clinicians agree that the late toxæmias of pregnancy (albuminuria and eclampsia) sometimes give rise to chronic nephritis and frequently

recur in subsequent pregnancies. However, there is disagreement in the interpretation of the facts.

This article is based on ninety-one originally healthy women who were followed for from two to twelve years after the first attack of toxæmia. Thirteen (14 per cent) developed chronic nephritis. In nine, this became evident after the first toxæmic pregnancy, in two, after the second, and in two, after the third. Three of the women died from uræmia.

Thirty-five (38 per cent) of these women had a recurrence of the toxæmia in a subsequent pregnancy, but were free from signs of permanent renal damage in the interval between the pregnancies. Most of them had a toxæmia in all subsequent pregnancies.

Forty (44 per cent) had a number of subsequent pregnancies with no recurrence of the toxæmia.

The two major questions to be answered are:

- 1 What is the cause of the toxæmia?
- 2 What is the cause of the recurrence of the toxæmia in the group in which recurrence is a constant feature?

Gibberd claims that his theory of occult nephritis answers the second question although it does not explain the cause of the toxæmia. He believes that the renal damage, which is manifested when the patient becomes pregnant again by recurrence of the toxæmia, is occult nephritis.

The factor determining recurrence must meet the following requirements:

- 1 It must be acquired, since some women do not have a recurrence until late in their child-bearing life.
- 2 Once acquired, it must be constantly present, since women having one recurrence tend subsequently to have others.
- 3 It cannot be precisely the same factor as that responsible for the first toxæmia, as there is a well defined group of women who, having one toxæmic pregnancy, subsequently show no tendency to develop a recurrence.

Occult nephritis will satisfy all of these requirements. Evidence that the occult renal damage is caused by the first toxæmia is the fact that recurrence can be favorably influenced by cutting short the length of the first toxæmia by the induction of premature labor.

T. FLOYD BELL, M.D.

McKelvey, J. L., and Turner, T. B. Syphilis and Pregnancy. An Analysis of the Outcome of Pregnancy in Relation to Treatment in 943 Cases. *J. Am. Med. Ass.*, 1934, cx, 503.

The authors report a study of 943 pregnancies in syphilitic women with regard to the effect of anti-syphilitic treatment on the outcome of the pregnancy, the occurrence of congenital syphilis in the offspring, and the relative value in the diagnosis of congenital syphilis of the Wassermann reaction of the blood of the umbilical cord, the histological structure of the placenta, and roentgen examination of the infant's bones for syphilitic epiphysitis.

Of the cases in which the Wassermann reaction of the blood of the umbilical cord was negative, the

infant was non syphilitic in 86 per cent whereas of those in which this reaction was positive the infant was normal in only 18.6 per cent.

Of the cases in which the placenta was normal on macroscopic and microscopic examination the infant was non syphilitic in 79.9 per cent whereas of those in which the placenta showed syphilitic changes the infant was syphilitic in all but 12.1 per cent. When both the Wassermann reaction of the blood of the umbilical cord and the condition of the placenta were considered together the information obtained was of more value than when only one of these factors was considered alone.

Infants presenting roentgen evidence of syphilitic epiphyseitis invariably exhibited other evidences of congenital syphilis. However of the infants showing no abnormalities on roentgen examination 20.5 per cent were subsequently shown to have congenital syphilis.

The striking beneficial effect of antenatal arsenphenamine therapy is shown by the fact that only 5.7 per cent of the infants of untreated syphilitic mothers were born alive and 64.5 per cent of these were syphilitic whereas when as little as 1 gm. or less of arsenphenamine was administered 89 per cent of the infants were born alive and only 7 per cent were syphilitic. The administration of larger amounts of arsenphenamine or related products brought about a further reduction in the fetal mortality and in the incidence of syphilis in the offspring. In cases in which as much as 4 gm. (from 12 to 14 injections) was given none of the infants was syphilitic. The administration of heavy metals in mercury or bismuth compounds in addition to arsenphenamine yielded better results than the administration of arsenphenamine alone. Better results were obtained also when the treatment of the mother was started in the first half of pregnancy than when it was begun in the latter half. However it was found particularly important to give the arsenicals in the two months immediately preceding delivery.

In the cases of women who were treated before pregnancy and not during pregnancy the results were in general quite as good as those obtained when the woman was treated only during pregnancy. However the status of the syphilitic infection in the mother was probably the important factor. Anti-syphilitic treatment both before and during pregnancy yielded results superior to those obtained by treatment during either period alone.

ROLAND McFETRIDGE, M.D.

Miles U. Boyce, I. F. and McFetridge, E. M. A Surgical Consideration of Appendicitis in Pregnancy. *Am. J. Obst. & Gynec.* 1934 23: 1-4

Appendicitis as a complication of pregnancy is particularly likely to recur if there has been a history of previous attacks. The pathological changes are probably no more serious than in the non-pregnant state but because of anatomical and physiological factors may become severe and fatal if surgical treatment is not given promptly.

Abortion increases the mother's risk but occurs because of the disease and not because of the surgery instituted to relieve it. The fetal mortality is high. The maternal mortality depends on the stage of the pregnancy and the severity of the disease. When the disease is mild it is little higher than in the non-pregnant state.

Diagnosis late in pregnancy is complicated by the various factors introduced by pregnancy and is almost entirely a clinical problem. In the differential diagnosis the chief difficulty is presented by puerilis.

Prompt operation is indicated as soon as the condition is diagnosed or reasonably suspected and should be performed throughout according to sound surgical principles. Delivery should be according to obstetrical indications. Proper precautions during the immediate postoperative period may prevent abortion or premature labor.

In fifty cases reviewed by the authors there was only one death that of a woman in the third trimester of pregnancy who had a generalized peritonitis with subsequent phlebitis of the pelvic veins. Forty-five of the fifty patients were operated upon before the condition became serious.

EDWARD L. CORZILL, M.D.

## LABOR AND ITS COMPLICATIONS

Menger, R. Late Cesarean Section. The Indications for Operative Intervention. Conduct of the Test of Labor. *La césarienne tardive*. Les indications des procédés opératoires. *Conduite de l'épreuve du travail*. *Gyn. 1933* 21: 1664

The decision for or against delivery by the abdominal route during labor is extremely difficult to make in borderline cases. It is usually based on an evaluation of the clinical signs of probable or potential infection and as there is no constant parallelism between such clinical signs and the virulence of the bacteria there can be no absolute certainty as to the proper procedure. The procedures used are therefore based entirely upon probability.

The author divides the following 4 degrees of infection during labor and gives his preference for treatment in each: (1) infection not evident but possible; (2) infection not evident but probable; (3) infection evident but apparently not severe; and (4) infection evident and severe. In the latter types there is usually little difficulty in arriving at a decision. In severe cases complete hysterectomy is the only treatment. In less severe cases external ligation of the uterus after the classical cesarean section (Porter's operation) may be performed, especially if the patient is a young primipara or a woman without living children.

The first 2 types of infection require great care in the determination of the indications for and the management of the test of labor especially in borderline cases of pelvic contracture. No fixed rules can be laid down as all of the following factors must be considered:

1. Static factors. In case of funnel and generally contracted pelvis the test of labor should be less

prolonged than in cases in which the pelvis is of the flat type. The size and condition of the fetus must also be taken into consideration. In cases of large fetus, lack of engagement, and over-riding of the head undue prolongation of the test of labor must be avoided. When the fetus is believed to be damaged caesarean section should be avoided if possible.

2. Dynamic factors. When engagement fails to take place in the presence of good uterine contractions, caesarean section should not be delayed unduly.

3. The effect of labor on the over-riding head, the relation of the head to the lower segment of the uterus, the advance and position of the presenting part, and the condition of the bag of waters. These factors must be considered carefully during the test of labor. Since rupture of the membranes is the critical point in the determination of the prognosis of the test of labor, this phase must be carefully watched. In cases of early rupture of the membranes, caesarean section is indicated when, after effective uterine contractions, the unengaged head fails to advance, does not accommodate itself to the lower uterine segment, or the cervix fails to dilate. In cases of cervical dystocia, spasmalgia (opium and belladonna) often gives good results. The procedure in the presence of unruptured membranes is debatable. Artificial rupture is indicated especially when dilatation is complete and should be followed by the injection of  $\frac{1}{2}$  c cm extract of the posterior lobe of the pituitary gland to stimulate contractions. The performance of low cervical caesarean section when advance of the head has failed to occur even after rupture of the membranes has never resulted fatally in the author's experience.

Mezger reviews the abdominal caesarean sections performed at the Maternité de la Pitié in the period from January 1, 1927, to December 31, 1932. Hysterectomy after caesarean section in 26 cases had a maternal and fetal mortality of 15 per cent. Conservative caesarean section performed in 212 cases had a maternal mortality of 3.2 per cent. Of 92 cases in which caesarean section was done after a test of labor there were 2 deaths, a mortality of 2 per cent. One of the deaths was due to operative shock and the other to infection. In 108 cases, including cases in which caesarean section was done after the test of labor and emergency cases in which the operation was done late in labor, there were 3 deaths, a mortality of 2.7 per cent. The author concludes that the results prove that at the Maternité de la Pitié the test of labor is carried out on the basis of the proper indications. HAROLD C. MACK, M.D.

#### PUERPERIUM AND ITS COMPLICATIONS

Paine, C. G. A Study of Immunity to Hemolytic Streptococci in Puerperal Infection. *J. Obst. & Gynec. Brit. Emp.*, 1934, vii, 12.

A number of strains of streptococci derived from cases of puerperal sepsis were studied with regard to

their toxin production, and sera from the patients were studied with regard to their bacteriotropic power and their ability to increase the bactericidal power of normal blood.

Two of seven strains showed toxic production. It was demonstrated experimentally that sera from patients infected with these toxin-producing hemolytic streptococci somewhat increased the bactericidal power of normal blood. These sera also protected mice against doses of the same toxin-producing streptococci which were beyond the maximum lethal dose for mice.

In experiments in which rabbits were immunized with sterile whole cultures of toxin-producing strains, the sera acted similarly to the sera in the previous experiments and this phenomenon was observed only when the toxin-producing strains were employed.

The antigen used in the rabbits was shown to contain virulent streptococci and toxin. Therefore the serum contained both antibacterial and antitoxic properties.

The findings of these experiments may possibly explain the beneficial effect of transfusions from patients convalescent from puerperal sepsis to patients suffering from puerperal sepsis and of small transfusions when the infective organism is a toxin-producing hemolytic streptococcus.

W. R. FRAZIER, M.D.

Markoff, N. Curettage of the Puerperal Uterus Containing Placental Debris in Infected Cases (Du curetage des utérus puerpéraux contenant des débris placentaires, dans les cas infectés). *Rev. franç. de gynéc. et d'obst.*, 1933, xviii, 992.

This article is a discussion of the active versus the inactive management of infections of the puerperal uterus containing placental fragments. Some obstetricians advocate surgical removal of retained secundines in the presence of infection by curettage or digital removal whereas others, fearing the dangers of uterine perforation and bacterial dissemination, advise expectant treatment. The author, who belongs to the first group, reports on 348 cases of retained secundines which were treated by curettage.

Of the 71 cases in this series in which infection was definitely indicated by a temperature of from 38 to 39 degrees, death occurred in 7 (9.8 per cent). In the remaining 277 cases, in which the temperature was normal or subnormal, there were no deaths. The mortality in the entire number of cases was 2 per cent. The histories of the 71 cases with infection are recorded briefly.

In the majority of the cases with infection the curettage was done between the fifth and tenth days after delivery. In some cases, however, it was done on the first day after delivery because of urgency of the symptoms, and in others as late as the thirtieth day. Of the 7 fatal cases, it was done on the third day in 2, and on the second, sixth, seventh, eighth, and sixteenth days in 1 each.



While the author believes that in general late curettage offers the most favorable results he states that early intervention is necessary when infection is associated with severe hemorrhage. As placental fragments become firmly adherent by fibrinous exudate after the first week early removal is usually less difficult and dangerous than late removal.

At the author's clinic cases of infected abortion are also treated actively when the infection has not extended beyond the uterus. In 537 cases reported by Soukhanoff the mortality was 3 per cent.

There is no strict parallelism between the elevation of the temperature and the virulence of the infection but the author cautions against curettage in the presence of high fever. While he admits that hysterectomy might have prevented the 7 deaths which occurred after curettage in his cases he points out that statistics on treatment by hysterectomy show a much higher mortality rate than occurred in his cases. Non fatal complications were noted in only 4 instances and the majority of the patients were discharged from the hospital from six to ten days after the operation.

The amount of hemorrhage from retained fragments of the placenta bears no direct relationship to the size of the fragments as small pieces frequently cause more bleeding than larger ones. Postpartum hemorrhage is rarely due to subinvolution. In most cases in which it is attributed to subinvolution it is due to retained fragments of placenta. Because of the lack of tonicity of the uterine musculature curettage of the uterus is more difficult after delivery than in the non puerperal state. It should be done only by a trained gynecologist for when it is improperly performed perforation may result or fragments may be overlooked. Irrigation of the uterine cavity with tincture of iodine after curettage is said to increase the tone of the uterus and aid in disinfection. Curettage is contra indicated when the infection has spread beyond the uterine cavity to the parametrium, adnexa or peritoneum.

The author is convinced that active management by curettage is greatly superior to conservative management and also gives better results than radical treatment by hysterectomy.

LEONARD C. M. CR. M.D.

# GENITO-URINARY SURGERY

## ADRENAL, KIDNEY, AND URETER

Castronovo, E., and Baroni, B. A Contribution on the Hydromechanical Pyelorenal Phenomena in Ascending Pyelography (Contributo alla conoscenza dei fenomeni idromeccanici pielorenali nella pielografia ascendente) *Ann ital di chir*, 1933, **xii**, 965

In a study of the hydromechanics of the kidney in ascending pyelography the authors exteriorized the ureters of dogs and injected an opaque solution such as lithium iodide, uroselectan, B. abrodil, perabrodil, pielofanina, or torofanina at various pressures and over various periods of time.

When the solution was injected at a pressure below the secretory pressure of the kidney over a long period of time, the pyelograms showed a reflux from the pelvis into the interstitial tissue lymphatics and tubules. This occurred when lithium iodide, uroselectan, abrodil, and pielofanina were used.

When the injection was made under a pressure slightly above the secretory pressure of the kidney and continued over a short period of time, the pyelograms showed a pyelo-interstitial, lymphatic, and pyelotubular reflux. The same result was produced with all of the solutions except torofanina. When the latter was used, no evidence of a reflux was noted.

When the injection was made under a pressure well above the secretory pressure of the kidney, the pyelograms showed a pyelovenous and pyelotubular reflux with diffusion into the cortex and subcapsular collections of the opaque solution. All of the solutions gave the same result, but some produced more distinct evidence of reflux than others.

PETER A. ROSI, M.D.

Ribbing, S. An Overlooked Source of Error in the Interpretation of Pyelograms (Une source d'erreurs négligée dans l'interprétation des pyélographies) *Acta radiol*, 1933, **xiv**, 545

The author calls attention to the fact that the contrast fluids used for retrograde pyelography mixes with the urine only with difficulty. By means of pyelograms he shows that they sink to the bottom of the renal pelvis and are covered by the urine. He emphasizes, therefore, that for the avoidance of error the patient should be X-rayed in several positions.

Husfeldt, E., and Aalkjaer, V. Maclean's Urea-Concentration Test in Cases of Surgical Kidney Sufferings. *Acta chirurg Scand*, 1934, **lxviii**, 399

The discussion of Maclean's urea-concentration test is preceded by a brief review of the unilateral kidney tests most generally used, the results ob-

tained with them, and the sources of error attached to them. In the Maclean test, 15 gm. of urea in 100 gm. of water are given by mouth after a twelve hours' thirst and the urea concentration in the urine from the bladder and ureter is determined at the end of one and a half hours. The authors have used this test in the cases of thirty-five patients with surgical conditions of the kidney—six with tuberculosis, four with tumor, 15 with nephrolithiasis, five with unilateral pyonephrosis, one with renal abscess, and four with hydronephrosis. Nineteen of the patients had been subjected to nephrectomy.

The advantages and sources of error of the test are discussed in detail.

Of twenty-six sound kidneys in the cases reviewed, twenty-four showed normal function (concentration 2 per cent or more) and the remaining two showed only a slight reduction from the normal which was explained by reflex polyuria.

Of the nineteen cases in which nephrectomy had been performed, the function of the remaining kidney was normal in sixteen and almost normal (concentration 1.9 per cent) in two. In one, the concentration was 1.6 per cent because the kidney contained two calculi the size of peas. Even in this case, however, the nephrectomy was uncomplicated. One patient with normal function of the remaining kidney died from postoperative uræmia evidently due to an ascending infection of the kidney.

In conclusion the authors discuss the results of the Maclean test in special groups of diseases.

Lupacciolo, G. Pyelo-Ureteral Dyskinesias and Malformations of the Vertebral Column (Disinesie pieloureterali e malformazioni della colonna vertebrale) *Radial med*, 1934, **xvi**, 1

Lupacciolo discusses the theory of Nuvoli and Impiombato that in many cases with symptoms of renal calculus in which no calculus can be demonstrated the symptoms are due to spastic and dysmetric phenomena produced by congenital malformation of the vertebral column. He believes that this theory merits consideration by roentgenologists and urologists because it seems to be supported by considerable evidence in the literature.

Of 350 cases studied in the Ospedale del Littorio, malformations of the spine such as lumbarization, sacralization, rachitis, supranumerary vertebrae, deformity of the sacrum were found in 226. Of the latter group, malformation of the kidneys was found in 6, renal tuberculosis in 4, and evidence of calculus in 28. In almost all of the cases in which pyelography was carried out, the examination revealed a functional disturbance of the urinary system such as spasms, dilatations, or abnormal motility. Of the 124 cases without malformations of the

spine renal malformation was found in 2 renal tuberculosis in 1 and evidence of calculi in 8. In 15 cases the symptoms were found to have no relationship to the urinary tract being due to a condition such as appendicitis or cholecystitis. In more than half the pain was due to vertebral arthritis or radiculitis.

The author reports 10 of the most interesting cases in detail.  
EUGENE T. LEE, M.D.

**Ittib, D. V. Vesico Ureteral Reflux in Renal Tuberculosis (Reflux Vesico Ureteral Reflux in Renal Tuberculosis).** *Rev. de S. P.* 1933, 1: 168.

The author emphasizes the frequency of vesico ureteral reflux in renal tuberculosis in general and after operation and the great practical importance of its recognition for the avoidance of diagnostic errors. Confusion arises particularly in unilateral cases with a considerable backwash on the normal side. In fact the reflux is found oftener on the sound side than on the diseased side. Tubercle deals essentially with regurgitation as the mechanism of in vesico ureteral reflux in renal tuberculosis. Two of them were inoperable. The third showed a late per sistent reflux after nephrectomy. Delayed post that nephrectomy does not always prevent in section of the other kidney. If reflux occurs before the operation greater precautions must be taken in all examinations and the patient must be kept under observation after the operation. The best means of protecting the second kidney is early removal of the kidney primarily attacked.

The article is supplemented by roentgenograms and a bibliography.  
M. F. MORSE, M.D.

**Giesenberg, B. E. B. Bodny, M. L. and Robins, S. A.** *Solitary Cysts of the Kidney.* *Am. J. S.* 1934, 1: 934.

The authors review the literature on solitary cysts of the kidney and discuss the theories regarding the formation of these cysts, their etiology, their incidence, the X-ray findings co existing pathological lesions and the methods of pre-operative diagnosis. They cite particularly Carson's summation of present day theories. The latter ascribes the cysts to (1) embryonal rest (2) a lure of union between the glomeruli and collecting tubules and (3) blocking of the tubules by fibrous tissue.

Intravenous urography is much more liable to assist in the diagnosis than retrograde pyelography. In many cases the pathological lesions are present. The author reports ten cases.  
ELMER HESS, M.D.

**Simpson, G. C.** *Carcinoma of the Kidney.* *Br. J.* 1934, 1: 383.

The author believes that carcinoma of the kidney occurs more frequently than the literature indicates and that the classification of renal growths into those of the hypernephroma or Wilms type is misleading. He reports four cases of renal carcinoma. The most

important signs in these cases were severe and constant pain in the back which was unaffected by exercise, the occurrence of hematuria at some time during the illness, collapse of one or more of the lumbar vertebrae which was evident in the roentgenograms, paraplegia and early cachexia. Repeated attempts to palpate the kidneys were unsuccessful except in one case.

Cystoscopic examination at the time of bleeding will reveal the source of the hemorrhage. In the absence of bleeding the determination of kidney function is of great value. Bilateral pyelograms may be misleading. As even in late cases there may be very little deformity an early diagnosis may be very difficult. Excretion urography may prove to be of aid.

When an exploratory incision is made in early cases the kidney may appear normal. The author split several kidneys and examined the surfaces for growths. This method is unsatisfactory because of hemorrhage, large infarcts and the possibility of missing a small tumor in another part of the kidney. The radical procedure for painless hematuria is nephrectomy. While many kidneys may have been sacrificed needlessly early lesions were found in some of those removed.

The author reports a case in which nephrectomy performed seven days after the first onset of hematuria revealed a sarcoma and death occurred several months later from secondary abdominal growths.  
CLAUDE D. PICKRELL, M.D.

## BLADDER URETHRA AND PENIS

**Herbst, R. H.** *Urography as a Guide to Surgical Indications of Diverticula of the Urinary Bladder.* *J. Am. Med. Ass.* 1934, 103: 183.

Herbst classifies diverticula of the urinary bladder into (1) large neck non retention diverticula and (2) small neck retention diverticula. In ordinary poststatic hypertrophy small neck retention diverticula are rare and the large neck non retention diverticula are found most often. The powerful contractions of the small thick walled bladder stimulated by infection causes severe intracystic pressure which may result in the formation of small or fine retention diverticula. This condition is most commonly associated with fibrosis or scar formation at the bladder neck. In simple hypertrophy of the prostate the obstruction and retention develop fast resulting in comparatively rapid dilatation and thinning out of the bladder wall. The stricture on weak areas in the bladder wall is less and diverticula when found are usually of the large neck type.

Early correction of the milder forms of bladder neck obstruction such as fibrosis and median bar may prevent the formation of diverticula. For a good functional result all retention diverticula must be removed. Non retention diverticula of small or moderate size do not require surgical attack other than correction of the obstruction at the bladder neck.  
THEOPHILUS G. ADER, M.D.

Washburn, V D The Treatment of Aniline Tumors of the Urinary Bladder *J Urol*, 1934, **XXX**, 155

The author states that when an aniline tumor of the bladder is small and benign in appearance, he does a biopsy and follows it by fulguration at the same sitting without awaiting the pathological report. For all bladder tumors except those that are small, accessible, and of Grades 1 and 2, the treatment of choice is the implantation of gold radon seeds through an open bladder incision. The seeds represent about 15 mc each and are implanted at distances of 1 cm. The author treats sessile and submucous tumors by implantation only. In cases of papillary and larger necrotic tumors the treatment consists in removal of the neoplasm by means of the electric current or by twisting it off with a sponge forceps, implantation of the base of the tumor with radon seeds, and cauterization. In order to apply a sufficient number of seeds, the size and number of the tumors must be known definitely. The author sutures the bladder wall snugly around a No. 22 F soft rubber catheter and a cigarette drain placed in the prevesical space. The catheter and drain are removed not later than the fourth postoperative day.

Twenty-three cases of aniline tumors of the bladder are reported. All of the patients were men engaged in the manufacture of dyestuffs. In eleven cases of single tumor and seven of multiple tumors the treatment consisted of cystoscopic fulguration with the bipolar current. In five cases open operation was done. Two of the latter were cases of single tumor, and three were cases of multiple tumors. One of the single tumors was of Grade 3 and the other of Grade 4. In one of the three cases of multiple tumors the neoplasms were of Grade 3, in one they were of Grade 4, and in one they were clinically malignant but unfavorable for biopsy. There was no mortality. LOUIS NEWWELT, M D

Flocks, R H The Roentgen Visualization of the Posterior Urethra *J Urol*, 1933, **XXX**, 711

Flocks describes a method for the roentgenological study of the male urethra and bladder which is based on the use of (1) a contrast medium—lipiodol mixed with water and a lubricating jelly, (2) the oblique position for study of the prostatic urethra and the neck of the bladder—the pelvis at an angle of 45 degrees with the horizontal, the left thigh extended, and the right thigh flexed about 45 degrees, and (3) the principle of double contrast for simultaneous visualization of the prostate and prostatic urethra—a combination air cystogram and opaque urethrogram.

The findings of the method in the cases of normal males of different ages and in cases of stricture of the urethra, periurethral abscess, prostatic abscess, cord bladder, contracture of the neck of the bladder, and benign and malignant enlargements of the prostate, and the use of the method in the study of the results of prostatectomy and prostatic resection are shown by illustrations.

The cysto-urethrograms of prostatic enlargements are interpreted briefly on the basis of the clinical and cystoscopic findings and the results of the operative procedures. The author states that, by the use of the cysto-urethrogram, it is possible to determine the nature of an anatomical deformity in the prostatic urethra and at the bladder neck quite accurately. FRANK M COCHEMS, M D

Møller, W Miliary Tuberculosis After Sounding of a Tuberculous Stricture of the Urethra (Miliartuberkulose nach Sondierung bei tuberkuloeser Urethrastricture) *Acta chirurg Scand*, 1934, **LXXXI**, 507

The author reports two cases of renal tuberculosis and tuberculous stricture of the urethra in which a fatal miliary tuberculosis developed immediately after intra-urethral treatment. In one case the latter consisted of catheterization, and in the other of sounding. As there were no signs of urethral tuberculosis in these cases, the author emphasizes the importance of considering the possibility of miliary tuberculosis in all cases of renal tuberculosis before sounding or cystoscopic examination is undertaken. In cases in which careful catheterization suggests the presence of urethral tuberculosis, intra-urethral manipulations with firm instruments should be avoided and the local condition should be investigated by intravenous pyelography. Only in cases in which secretory urography also fails should free exploration of the kidney or cystoscopic examination be attempted.

## GENITAL ORGANS

Coutts, W E Genito-Ano-Rectal Lymphogranulomatosis of the Male *Ann Surg*, 1934, **XCIX**, 188

The author reports a study of seven cases of genito-ano-rectal lymphogranulomatosis in the male. The etiology of the condition is obscure. The opinion that syphilis, tuberculosis, or gonorrhea may be the causative factor is now known to be incorrect. Two types of the condition are recognized. In one, the syndrome begins with the appearance in the lower perineum of abscesses and fistulae which are not related to the urethra, and the anorectal symptoms do not develop until several years later. In the other, the fistulae appear when the rectal stricture is already established and can be diagnosed by simple rectal examination. The site of penetration of the virus is apparently different in the two forms. In the first form it is probably the posterior urethra, and in the second, the anus or rectum. All but one of the author's seven patients were under thirty years of age. The prognosis of the condition is very uncertain. HENRY L SANFORD, M D

Johnston, R L Studies in the Physiology of the Prostate Gland *Endocrinology*, 1934, **XXIII**, 123

Johnston reports studies made on the prostate gland and testicles of rats and dogs to determine the

effects of radium emanation and roentgen irradiation on the histological structure and hormonal relations of these organs. The average weight of the testicles of white rats was reduced 42 per cent by 0.2 mc. of radon left in the scrotum for six weeks. Doses of 6, 8 and 10 mc. of radon in the prostates of dogs reduced the circumference of the prostate 22, 27 and 19 per cent in twenty-two, thirty-five and forty-one days respectively by necrosis contiguous to the source. Testicles irradiated with from 800 to 2,000 r units showed profound injury of the tubular epithelium. When 2,000 r units were used the destruction was almost complete. The corresponding prostatic epithelium showed no change. Fertility was decreased by irradiation of the testicles but not by irradiation of the prostate.

In studies of the effect of Antuitrin S Johnston found that there was usually a moderate increase in the size of the testicle and always a very marked increase in the size of the accessory sex glands. Very heavy roentgen doses to the testicles of dogs failed to produce castration effects on the prostate gland, a fact showing that the testicles so treated maintained their hormonal function. FRANK M. COCHENS, M.D.

HARRIS S. II. Prostatectomy with Closure. Five Years Experience. *Brit J Surg* 1934 xii 434

The author reviews 371 prostatectomies performed by him in the five year period ending October 1932. In 356 of these cases primary closure was done after the prostatectomy. Suprapubic drainage was left in only 15. There were 2 deaths, a mortality of slightly less than 2.7 per cent. In only 3 of the cases of primary closure was re-opening of the bladder necessary. In one of the latter cystostomy was done on the seventh day on account of incomplete drainage due to a faulty catheter. In another cystostomy and blood transfusion were necessitated by a severe hemorrhage occurring immediately after the prostatectomy. In the third the tip of the catheter found its way through the bladder incision and on the seventh day the bladder was opened, the catheter re-adjusted and the pre-escal space drained.

The technique of the suprapubic operation and the instruments used for it are described in detail. The essential features of the operation are immediate control of hemorrhage by suture reformation of the prostatic urethra with obliteration of the prostatic cavity and immediate closure of the bladder and abdominal wound. THOMAS P. GREER, M.D.

Monaco B. Suture of the Vas Deferens (Suture of the deferent). *Ital d Ch* 933 260

Accidental injury to the vas deferens—complete severance or crushing with a clamp—is not an uncommon occurrence during operations, especially those performed in the inguinal region. The early treatment of such injuries by simple approximation of the ends without suture or by simple suture of the ends without the use of a special technique led almost invariably to occlusion of the lumen.

In experiments on ten dogs Monaco secured the vas deferens and then repaired it by end-to-end approximation with splinting by means of a short piece of heavy catgut bridging the section and maintenance of the approximation by two laterally placed catgut sutures which did not penetrate the entire wall of the vas deferens. After varying periods of time the dogs were sacrificed and the vas deferens were examined roentgenologically and histologically.

In one dog a diverticulum and in two dogs a dilatation of the lumen was found at the point of section. One dog studied biologically and carefully controlled was found to have a pervious vas deferens which transmitted living spermatozoa one hundred and ten days after the operation. Obliteration of the lumen occurred in only one case and in this instance was due to angulation of the site of section. Histological examination showed that the elastic tissue reappeared early but the muscle tissue was not replaced up to ninety days after the operation.

4 LORIS ROSSI, M.D.

DODRZANIEKI W. Roentgenography and Radionography of the Male Genital Tract—Aso. Epididymo-Testiculography. An Experimental and Clinical Study (Radiographie et radionographie des voies génitales masculines—so. épидидymo-véiculographie. Etude expérimentale et clinique). *J de Ch* 933 11 43

The recent development of substances opaque to the X-rays and innocuous to tissues has permitted the extension of roentgenographic technique to organs hitherto considered inaccessible. For some reason, however, the male genital tract has been neglected. In this article the author presents the results of his experience in this field. His material included dogs, surgical specimens, cadavers and patients.

The opaque solution employed was thorotrast. This is a viscous fluid with a 25 per cent content of thorium hydroxide in colloidal suspension. It has the advantage of not being precipitated by organic material.

In the dog excellent roentgenograms of the epididymus were obtained by injections through the vas. Histological examinations showed no damage to the epithelium.

Studies of human material were first made in testicles removed at operation. The images of entrapped abscesses limited to the epididymus from those involving the testicle.

In the interpretation of roentgenograms of the seminal vesicles the normal anatomical variations must be taken into account. Ticker distinguishes five types based upon the length and tortuosity of the principal ducts relative to the lateral foci and the number and size of the diverticula. A full bladder causes the sides to descend in relation to the pubis and a large prostate causes them to ascend.

The seminal vesicles may be injected by catheterization of the ejaculatory ducts or by puncture

of the vas The first method is of little practical value because it cannot be performed consistently even by the most expert operators Employing the second method, the author injects the thorotrast into the lumen of the isolated vas by means of a fine needle Three or four cubic centimeters are injected in the direction of the seminal vesicle and from 2 to 2½ cm toward the epididymis Sometimes the quantity must be increased, depending upon the nature of the lesions present The roentgenograms are taken immediately To obtain the sharpest possible images it is best to roentgenograph the two sides separately

In tuberculosis of the seminal vesicles the changes are very clear even when the organs are normal to palpation The shadows of the diverticula are rounded, producing a shotty aspect Cavities appear as large pouches with hazy outlines

Roentgenograms of the epididymis are of value in determining the extent of a tuberculous process When epididymectomy is contemplated, it is possible to determine with a fair degree of certainty whether or not the testicle can be preserved

The author has found that in epididymitis the most extensive lesions are always in the tail

Injections into the tunics of the testicles were attempted, but no findings of value were obtained

The article contains twenty-three roentgenograms  
ALBERT F DE GROAT, M D

Hellner, H Local Circulatory Disturbances of the Testicle (Die örtlichen Kreislaufstörungen des Hodens) *Beitr z klin Chir*, 1933, clviii, 225

The changes caused by disturbances of the blood supply of the testicle must be classed as atrophies and necroses Necrosis of the testicle is considered an anæmic necrosis or a hæmorrhagic infarction Both conditions may occur as the result of direct or indirect occlusion of the vessels Necrosis does not permit recovery, but atrophy is reversible up to the last degree and may be followed by recovery and new formation of spermatic cells Only when the entire spermatic cell layer, including the Sertoli cells, is dead is recovery from atrophy impossible Under these conditions fibrosis of the testicle occurs and the seminiferous tubules are obliterated by connective tissue

To determine the effects of various types of circulatory disturbances on the testicles the author carried out a large number of experiments on dogs He found that complete interruption of the circulation in the spermatic cord caused complete destruction of the testicle within from four to six hours

Venous obstruction does not cause noteworthy atrophy In a child, torsion of the cord of 180 degrees which resulted in venous obstruction did not cause serious damage

Ligation of the internal spermatic artery is not always followed by necrosis, but may result in a moderate degree of atrophy Great care is necessary in ligation of the internal spermatic artery as often the internal spermatic veins are ligated

Ligation of the internal spermatic vessels causes severe atrophy followed by fibrosis of the testicle and even necroses That the severe injury of the testicle from ligation or occlusion of the internal spermatic vessels which was observed in the dog occurs also in man, is evidenced by clinical observations of so-called spontaneous degeneration of normal testicles In cases of thrombosis of the spermatic cord and therefore complete obstruction of the circulation of the testicle, treatment leading to recovery is impossible

The author carried out a large number of torsion experiments on dogs to confirm experimentally the occasional clinical observation that recovery of the testicle is possible if the torsion does not exist too long He found that every unrelied torsion causes fibrotic atrophy of the testicle Complete torsion of 360 degrees does not necessarily lead to complete circulatory occlusion resulting in hopeless necrosis in from four to six hours Therefore its treatment should vary According to the experiments, complete torsion of the testicle relieved within twelve hours is compatible with recovery of the organ This finding is confirmed by about half a dozen clinical observations It is necessary to make the diagnosis of torsion early This is easy if the clinical picture of the condition is known, but unfortunately the clinical picture is often confused with that of acute orchitis, especially in the cases of children Only early operation will save the testicle It is not always necessary to remove a twisted testicle immediately on the assumption that it will become necrotic (Z)

Stelle, C W Teratoma Testis Fifteen Cases Studied Microscopically and Biologically *Arch Surg*, 1934, lxxviii, 1

Stelle reports fifteen cases of malignant tumor of the testicle and gives a brief review of the literature on such tumors In all of his cases the neoplasm was an embryonal adenocarcinoma of teratomatous origin Stevens, Ewing, and Bell have reported adult teratomata of the testicle

In all of Stelle's cases in which either the original tumor or an active metastasis was present Prolan A could be detected in the urine by the method of Aschheim and Zondek Stelle stresses the importance of the demonstration of Prolan A in the urine, especially in the diagnosis of metastases He states that teratoma of the testicle is relatively radiosensitive, and the best method of treating it is surgical intervention supplemented by external irradiation

FRANK M COCHEMS, M D

## MISCELLANEOUS

Campbell, M F Chronic Pyuria in Juveniles *J Urol*, 1934, xxxi, 205

Pyuria which persists longer than four weeks is considered chronic In juveniles its causes are the same as in adults The most frequent causes are lesions producing stasis The author reviews 402

cases—those of 292 girls and 110 boys ranging in age from three months to fifteen years.

The diagnoses with which the patients entered the hospital were chronic pyelitis, enuresis, renal stone, renal tuberculosis, and cystitis.

Many of the renal infections were hematogenous, although ascending infection is common in female children. The focal infections disclosed on general physical examination were numerous, but respiratory infections were most common. Malnutrition and anemia were found in 178 cases.

The colon typhoid group of bacteria were present in 194 cases, staphylococci in 143, streptococci in 43, and various other types in the remainder. The chief renal changes were those of chronic interstitial suppurative pyelonephritis. In addition, there were changes caused by stasis, stone, and other local lesions. The changes in the rest of the urinary tract were dependent on infection and the primary lesion.

The diagnosis requires a careful general and local examination. Urinalysis is very important. In the cases of males, urine voided after careful local cleansing, and in the cases of females, catheterized urine should be examined. Pus, blood, and bacteria are of chief importance.

After making the diagnosis, the author gives a two-week course of intensive medical treatment. This includes measures to eliminate focal infection and the administration of methenamine combined with ammonium chloride. From 10 to 12 g. of methena-

mine are given a day at intervals. In the cases of children older than three years, the ketogenic diet may be used.

At the end of the two weeks of medical treatment, a plain roentgenogram of the urinary tract is made. Cystography, intravenous urography, and tests of kidney function follow. If a diagnosis cannot be made by these measures, cystoscopy is necessary. Inspection of the urethra and bladder, ureteral catheterization, tests of kidney function with indigocarmine, and retrograde pyelography are done as indicated. General, local, or caudal anesthesia is used.

The treatment is based on the cause of the condition. The surgical procedures are the same as for adults. Juveniles stand major urological surgery better than adults. Postoperative acidosis is dangerous. An increased fluid intake and numerous blood transfusions are indicated. Blood transfusions are invaluable in surgical shock. In very young children, hemorrhage is of more importance than infection, whereas in older children, the reverse is usually true. Negative cultures are of greater importance than a clear urine.

In the cases reviewed, there were 22 deaths from urinary disease and 19 from other causes. Twenty-one children died from contagious diseases. Fifty-two were cured, 192 were benefited, 32 were not benefited, and 36 cannot be traced.

CLAUDE D. PICKRELL, M.D.





conclusion that the case he reports was a case of primary intracortical and subperiosteal lymphangioendothelioma and that every true Ewing's tumor is of this type. The origin is in the lymphatic endothelium of the Haversian canals and beneath the periosteum. The old theory that Ewing's tumor is a primary osteolytic neoplasm of the medullary cavity is erroneous.

CHESTER C. GOY, M.D.

Konjet ny C E Bone Sarcoma and Its Limits  
(K ocl nsark me dth Reg enz g) Arcl f  
kl l 933 cl 1 335

The author reviews the advances that have been made in recent times in our knowledge of bone sarcoma, calling attention particularly to the fundamental investigations of the American Registry of Bone Sarcoma founded by C. D. Mann in 1900. The results of which have yielded new data for the recognition and judging of bone sarcoma.

On the basis of L. W. S. recommendations and the classification developed by the American Registry of Bone Sarcoma, bone sarcomata are divided into five groups: (1) osteogenic sarcoma, (2) Ewing's sarcoma, (3) periosteal fibrosarcoma, (4) parosteal and extrapariosteal sarcoma of the soft parts and (5) unclassified tumors.

The metastatic growths and myelomata constitute a special group of malignant bone tumors.

Americans apply the term osteogenic sarcoma to all bone sarcomata which can be traced back to entetically to the tissue elements entering into normal bone structure. The tissue structure of normal tumors developing from the osseous mesenchyme corresponds to the manifold developmental possibilities of these cells in the formation of cartilaginous, osteoid, osseous, and connective tissues. This explains the well-known terms for the various tissue forms. The osteogenic sarcoma is the most common bone tumor. It develops as a single growth and occurs most frequently in the long tubular bones especially those of the lower extremities. The primary development takes place usually in the metaphysis and rarely in the diaphysis. A primary appearance in sesamoid bones is observed practically only in Paget's osteofibrosarcoma. The tumor is most common between the fifteenth and twentieth years of age. Sarcoma developing on the basis of Paget's osteofibrosarcoma usually occurs at more advanced ages.

With regard to the causes of the occurrence of sarcoma very little is known. The fact that the tumor occurs most frequently in the period of maximum bone growth may be of etiological significance. The often repeated question regarding the relations between injury and sarcoma development has not yet received a definite answer. In general the view of such a causal relationship must be rejected in spite of the possibility that injury may hasten the development of a sarcoma. Also difficult to answer is the question of the importance of chronic inflammatory, chronic irritations, and endocrine and metabolic disturbances in the development of sarcoma. In this connection the author cites the development of

sarcoma on the basis of Paget's osteitis deformans and the somewhat obscure cases in which the development of sarcoma is assumed to have had its origin in a circumscribed osteitis fibrosa. He refers also to sarcoma developing during the healing of a fracture and on the basis of a traumatic periostitis or myositis ossificans. Of greater general pathological importance are Martland's conclusions regarding the sarcoma occurring in radiomical painters which developed on the basis of changes in the bone marrow (in the sense of an osteitis fibrosa) and must be attributed to the chronic irritating effect of radioactive substances. Mention is made also of the development of bone sarcoma after roentgen irradiation of tuberculous joints. A case of sarcoma developing in the region of a local osteomyelitic fistula is reported and attention is called to the fact that osteosarcomas and chondromas may undergo malignant degeneration (secondary chondroblastic osteogenic sarcoma).

The author discusses next the clinical symptoms and clinical diagnosis, especially the roentgen diagnosis. The clinical differentiation of bone sarcoma from various other bone diseases is associated with great and sometimes insurmountable difficulties. The difficulty in certain cases of differentiating the osteofibrosarcoma or so-called traumatic periostitis from sarcoma is discussed on the basis of two cases seen by the author.

The prognosis of osteogenic sarcoma is discussed briefly. The differentiation between primary and secondary chondromatous sarcoma is important as the prospects for cure may be quite different in the two conditions.

Histologically Ewing's sarcoma is an immature round-celled sarcoma. The development of this tumor in bone and its sensitiveness to irradiation have been known for a long time but we are indebted to Ewing for clarification of the clinical symptoms and the roentgen findings. According to the comprehensive American statistics Ewing's sarcoma constitutes 15 per cent of all bone sarcomata. They occur usually in young persons but may develop also in advanced age. They are often characterized clinically by an elevation of the temperature and a marked leucocytosis. The condition may be easily confused with osteomyelitis. Even when biopsy is done this diagnosis may be suggested by certain pathological anatomical peculiarities. According to the findings of recent investigations which indicate that the tumor is a primary bone lymphoma, Ewing's original theory that it is an endothelial myeloma must be rejected. Very characteristic is the metastasis in the bony system which may occur quite early. During the late stages there are in addition numerous metastases in the internal organs especially the lungs. As the diagnosis is usually made late the prognosis is as unfavorable as in osteogenic sarcoma.

The periosteal fibrosarcoma develops from the periosteum and like the extrapariosteal sarcoma of the soft parts may involve the bone. It occupies a

special position as it is the most highly differentiated and most curable of bone sarcomata. In all cases primary amputation is followed by definite cure.

Among the extraperiosteal sarcomata of the soft parts there may be immature sarcomata which, on superficial observation, may seem to resemble fibrosarcomata. Of decisive importance in the prognosis and treatment is the histological structure of the tumor. Classification of the periosteal fibrosarcomata as a special group of bone sarcomata is necessary and must be taken into consideration in future statistical reports.

First among the rare malignant tumors of bone are the endoheiomata, and next, the lipoblastic bone sarcomata (liposarcomata). The myelomata and metastatic bone growths are discussed briefly.

The most fundamentally important advance in the diagnosis of bone sarcoma is recognition of the fact that the so-called "crustaceous myelogenous giant-celled sarcomata" have nothing in common with the sarcomata and are benign formations. The firm foundations of today are the result of decades of careful research in many places. The author reviews the history of these investigations. There is a difference of opinion as to whether these tissue formations are of an inflammatory nature or are true, though benign, neoplasms. Facts indicating that they are of a simple reactive character are cited. The giant-celled tumors are chronic, inflammatory, resorptive new formations or regenerative malformations or exuberant growths to which a confusing number of names have been applied in the literature. For the term "local tumor-forming osteitis fibrosa" the author suggests substituting the term "giant-celled granuloma."

Numerically, the benign giant-celled tumors play a very important part among the bone tumors. As they are observed nearly as frequently as the osteogenic sarcomata, exact knowledge regarding them is of importance. Progress in pathologico-anatomical and biological knowledge has considerably increased the reliability of clinical diagnosis and, in treatment, has prevented unnecessary mutilations which, even in recent times, have often been regarded as correct. In the history, trauma is often given as the cause of the tumor. The parts most frequently involved are the distal femoral epiphysis, the proximal tibial epiphysis, and the distal radial epiphysis. According to the comprehensive American statistics, the knee joint is involved in more than 50 per cent of the cases. The condition occurs with equal frequency in both sexes. It is most common between the ages of twenty and thirty years, but in about 30 per cent of the cases it develops between the thirtieth and seventieth years. In the great majority of cases only one bone is involved, involvement of several bones usually indicates von Recklinghausen's generalized osteitis fibrosa. However, there is a diastotic form. The author discusses the latter in detail.

Konjetzky emphasizes that the generalized osteitis fibrosa of von Recklinghausen and the isolated giant-celled granuloma are entirely distinct diseases.

A transition of one into the other, such as has frequently been assumed, is therefore impossible. The brown tumors in the generalized osteitis fibrosa of von Recklinghausen are very characteristic of that disease, but are not specific.

The author discusses the clinical aspects and the pathological anatomy in detail and especially the relationship of giant-celled tumors to central bone fibromata and bone cysts. He cites the spindle-celled and xanthomatous variants of the giant-celled tumors, and reports a case of central bone xanthoma as a variant of the typical giant-celled granuloma. He discusses the course and development of giant-celled granulomata of the central and cortical types. The principles of treatment are outlined.

Even today, two objections are made to strict separation of the typical giant-celled tumors from the osteogenic sarcomata: (1) emphasis of the fact that recurrences have followed simple curettage of the typical giant-celled tumors, and (2) reference to various observations from which it is inferred that a typical giant-celled tumor has taken a malignant course and formed metastases. These points are discussed in detail. Recurrences after simple curettage are explained by incomplete removal of the diseased tissue. Secondary infection after curettage of giant-celled tumors and its sequelae are discussed. The question whether gradual malignant change may occur in benign giant-celled sarcoma is discussed at length. So far, such a change has not been proved.

In conclusion the author gives his views regarding the question of the diagnostic importance of biopsy and the exploratory excisions from bone tumors. He states that opinions with regard to the efficacy of biopsy differ according to the pathologist's ability to grasp and evaluate pathologico-anatomical and histological findings. There are avoidable and true difficulties in tissue examinations. He who weighs the pros and cons scientifically and critically can never underrate biopsy. He will see in it one of the most important diagnostic methods in the realm of clinical study. However, it must be used just as skillfully as any other method of research.

KONJETZKY (Z)

Ianăș, A. Hæmophilic Arthropathy (Artropatie hemofilice). *Rev. de chir.*, Bucharest, 1933, xxxv, 464.

Joint manifestations are among the most frequent complications of hæmophilia. They may occur from the time the child begins to walk up to the age of fifteen years, but are most frequent between the ages of three and ten years. They are usually preceded by epistaxis, bleeding of the gums, and ecchymoses. In some cases hæmarthrosis is the first clinical sign of hæmophilia. Hæmophilic arthropathy generally occurs in serious cases in which the coagulation of the blood is delayed more than an hour. It frequently occurs after repeated slight trauma. The knee joint is affected most frequently, and the elbow next most frequently.

From the point of view of pathological anatomy, hæmophilic arthropathies may be divided into

## INTERNATIONAL ABSTRACT OF SURGERY

(1) hæmarthrosis (2) chronic arthritis with or without ankylosis and (3) arthritis deformans. These are in reality different stages of the same process. The author reports a case of each form with roentgenograms.

ANDREY GOSS MORGAN M.D.

Felix The Organic Unity Between Nerve and Muscle (U b die Einheit zwischen Nerven und Muskel) Z. f. Ch. 1933 P. 2447

Organic unity is defined as an active attempt at unity which becomes evident when there is a separation of the individual parts of no entity. Arrest of degeneration of skeletal muscle affords an experimental means of explaining the problem of organic unity. The muscle is separated from its motor nerve and the motor nerve immediately implanted into the paralyzed muscle at a distance from its original point of entry. For such experiments the diaphragm has been found especially suitable as it consists of two halves with a separate innervation which is readily accessible to operative approach. It has a movement distinguishable from that of the neighboring muscles which may be observed roentgenologically and it may be photographed to penetrating light. The phrenic nerve is severed just above its entrance into the muscle and reimplanted into the paralyzed half of the muscle somewhere else. While progressive atrophy leading to complete disappearance of the muscle fibers occurs in the involved half of the diaphragm, the diaphragmatic musculature closely bordering on the area of implantation remains normal. Under the influence of the reimplanted nerve the muscle is kept from degenerating. Although the author's observations were continued for two years true regeneration of the muscle was never seen. In the dog there is no true regeneration of the striated muscle of the diaphragm.

The interruption of degeneration in the vicinity of the new site of entry of the nerve is dependent on the contact between the nerve and the muscle. As it may be seen in the third week it is not dependent on the development of the axons from the stump. From the day of the nerve implantation the muscle in the vicinity of the nerve was made to contract by galvanic faradic stimulation applied to the nerve. Degeneration failed to occur also when the stimulation was applied not to the junction of the nerve with the muscle but to the nerve itself.

While the sympathetic fibers of the phrenic nerve must be regarded as sensory fibers the question arises as to whether the sympathetic nerve does not also take over the trophic influence which was lost in the experiment. In the dog the phrenic nerve may be deprived of its sympathetic constituents by extirpation of the stellate ganglion. Nerveless animals therefore as demonstrated also in this and muscle is dependent not on the sympathetic fibers of the phrenic nerve but on a function of the motor neuron.

When a living layer of pleura or pericardium was interposed between the proximal stump of the nerve

and the diaphragm arrest of degeneration occurred because the resistance was overcome. After three months the preserved portion of muscle was actively movable. Accordingly it is evident that the emaciation from the nerve a powerful growth process which reaches the muscle fibers and is only retarded not arrested by interposed tissue.

By such experiments we can study problems of importance to practical surgery such as the reinnervation of paralyzed muscles by other nerves and the late innervation of paralyzed muscles by their own nerves. Implantation of the phrenic nerve first into another muscle and then into the diaphragm is late innervation. Even after from three to four weeks a trophic influence is no longer apparent in new neurotization. If the new innervation involves a muscle with impaired nutrition no trophic or motor influence results. Arrest of degeneration fails to occur also when foreign innervation is done e.g. when an intercostal nerve is implanted. This was the case when the vagus nerve was implanted in the diaphragm. The result is different however when the vagus nerve is implanted at the point where the phrenic nerve formerly entered the diaphragm. An anastomosis being thereby effected between the vagus trunk and the distal stump of the phrenic nerve. Therefore we are able to exert a trophic influence on striated muscle by means of a sympathetic nerve. However as active movement never occurs the vagus neuron replaces the nutritive but not the motor function of the motor neuron.

STRAUS 122 (2)

Klemperer P. Myoblastoma of the Striated Muscle. Am. J. C. 934 X 34

Klemperer reports six cases of myoblastoma of striated muscle seen in the Mt. Sinai Hospital, New York.

Myoblastomata of striated muscle are most common in the third and fourth decades of life and are twice as common in females as in males. They are found most frequently in the tongue. They are generally benign. All of the patients whose cases are reported by Klemperer were entirely well when they were last seen. In one case twenty years had elapsed since the myoblastoma was recognized. In the differential diagnosis the chief neoplasm to be considered is the xanthoma, but this is always ruled out by the absence of fat in the tumor cells.

P. L. C. COLOVINA M.D.

Macaggi D. True and Pseud Dupuytren's Contracture in Relation to the Discussed Traumatic Etiology of the Lesion (Verh. p. Dupuytren's Contracture in Relation to the Discussed Traumatic Etiology of the Lesion) P. L. C. COLOVINA M.D. 1933

The author states that Dupuytren's contracture of the palmar aponeurosis is most common in males about fifty years of age. It is first manifested by a decrease in the extension of the ring and small

fingers at the metacarpophalangeal joints. The changes in the middle finger are less evident, and the index finger and thumb are rarely involved. The condition runs a slow course. It usually begins in the more active hand. Often it is present for from one to two years before contracture is evident, and from six to twelve years before the advanced stages of the disease are apparent. The contracture is usually symmetrically bilateral, but is more pronounced in the active hand. When it is fully developed, the basal phalanges are forcibly flexed on the corresponding metacarpals and the middle phalanges on the basal phalanges, but the distal phalanges remain free. Associated with the flexion there are longitudinal cords in the palmar aponeurosis, along the course of which irregular nodules and intersecting bands may be felt. Anatomically, sclerotic and atrophic changes are present in the palmar aponeurosis, skin, and subcutaneous tissues. The flexor tendons remain relatively uninvolved.

Dupuytren's lesion is uncommon. The author believes that trauma is not a factor in its development. He states that Mori found the condition in only 4 of 21,800 manual laborers, and he, himself, found it in only 5 of about 2,000 industrial employees such as miners, mechanics, and metal workers. More frequent in the hands of such workers were changes that may be classified as pseudo-Dupuytren's contracture as the hand subjected to repeated trauma tends to be somewhat flexed. The author attributes this flexion to a contracture of the tendons. Localized areas of thickening, nodules, and fibrous cords may also be produced by the chronic circumscribed irritation of an instrument.

Macaggi reports 3 cases of contracture of the palmar aponeurosis showing the differences between true and pseudo-Dupuytren's contracture.

PETER A. ROSI, M.D.

Gubern-Salisachs, L. The Etiology of Dupuytren's Lesion (*Consideraciones acerca de la etiologia de la enfermedad de Dupuytren*). *Rev. de ciruj. de Barcelona*, 1933, III, 81.

Dupuytren's lesion is a retraction of the palmar aponeurosis. The name "Dupuytren's contracture" is incorrect as there is no pathological change in the muscles or tendons. The condition has been attributed to trauma, gout, rheumatism, chronic intoxication, embryological malformations, and other causes. From a study of twenty-nine cases, Kanavel, Koch, and Mason came to the conclusion that it is due to a hereditary tendency.

The author reports fifteen cases and concludes that the condition is the result of a funiculitis or neurodocitis of the extrameningeal tract of the nerve between the ganglion and the plexus, that is, through the vertebral foramen. In support of this conclusion he cites the contracture of the vertebral muscles of the adjacent column causing segmental rigidity of the vertebral column in a number of his cases. He states that the spinal fluid findings are also significant. In radiculitis

there is a lymphocytosis, whereas in funiculitis there is only a slight hyperalbuminosis. The cause of the funiculitis in the majority of the cases reported was cervical arthritis. The author believes that in all cases it is a trophoneurotic nervous lesion, but that it is not necessarily rheumatic. Similar lesions may be produced by syphilis, alcoholism, lead poisoning, and diabetes. Syringomyelia is a frequent cause of Dupuytren's retraction, and even very slight nerve lesions may produce the condition.

AUDREY GOSS MORGAN, M.D.

Badgley, C. E. Osteomyelitis of the Ilium. *Arch. Surg.*, 1934, LXVIII, 83.

Articles in English on osteomyelitis of the ilium have been comparatively few and most of them have dealt with acute osteomyelitis. Of the articles appearing in foreign literature one of the most outstanding was by Goulioud and another by von Bergmann.

Acute osteomyelitis of the ilium is generally regarded as a rare lesion with a grave prognosis and the frequent development of serious complications in those who survive. A proper understanding of the disease places the treatment on a definite basis, lowers the mortality, and generally leads to excellent results. Poor results are due to disregard of the facts now known.

Cases of osteomyelitis of the ilium constitute from 1 to 2 per cent of all cases of osteomyelitis. The condition usually occurs before the twenty-fifth year of age. It is more common after than before puberty. Goulioud, who published the first comprehensive article on the condition in 1883, divided cases of osteomyelitis of the pelvis into two groups with distinct clinical syndromes corresponding to the two periods of development of the pelvic bones. The first period extends from infancy to puberty, at the end of which time there is fusion of three bones forming the acetabulum. In cases of osteomyelitis of the pelvis developing during this period there is a diffuse infection which almost invariably occurs at the border of the acetabulum. The infection may be periacetabular and spread through the ilium, or intra-acetabular and involve the hip joint proper. The second period begins with ossification of the acetabulum and the appearance of marginal epiphyses, and extends to the time of fusion of these epiphyses, at about the age of twenty-five years. In this period the lesions occur about the marginal epiphyses. The chief points of involvement are the crest, the superior spines, and the infero-anterior spine. Goulioud advocated more radical operative intervention in this disease, with extensive drainage and removal of diseased bone. For cases with hip involvement he urged resection of the ilium.

In 1906 von Bergmann reported seventy-one cases of osteomyelitis of the pelvis. He also advocated resection of the diseased bone, especially in chronic cases. He recognized the frequency of recurrence after palliative operations, as for drainage only, and discussed the rare formation of sequestra and the fre-

quasi perforation of the tables of the ilium. He called attention to the marked thickening and sclerosis in chronic cases. His treatment seemed so radical that the wisdom of his advice was not recognized and the extensive resections he urged were performed in only a few cases.

The author briefly discusses the development and anatomy of the pelvis emphasizing the irregular structure of the ilium and its thinness at the bottom of the acetabulum and the center of the iliac fossa. He calls attention to the slope of the ilium which favors the formation of abscesses in the internal iliac fossa and the tendency of these abscesses to point forward at Scarpa's triangle.

In some cases of osteomyelitis of the ilium trauma seems to be a contributory factor. The bacterial organism is usually the staphylococcus pyogenes aureus. The ilium is similar to the long bones in that it has epiphyses and richly vascular juxtapositional zones in which there are centers of rapid ossification. Infections become localized in these juxtapositional zones in the same way as according to Ellis and Jones they become localized in the long bones. The rich periosteal blood supply tends to prevent extensive necrosis of bone and massive sequestration in infections of the ilium. In the great majority of cases which occur before puberty there is a diffuse involvement about the acetabulum in the zone of greatest vascularity from the nutrient vessel. The evidence indicates that the lesion occurs first in the cortex and later spreads subperiosteally. Therefore resection of bone rather than simple drainage of the subperiosteal space should be done. The principles of pathology of osteomyelitis of the long bones apply almost equally well to the ilium the chief difference being that in the ilium a generous blood supply of the periosteum on each side of the thin cortex prevents extensive sequestration. Involutionary formation with dense eburnation of the bone may occur and small sequestra may form but are readily digested by autolytic fermentaries and phagocytosis.

As observed by Coe blood acute osteomyelitis of the ilium is of two main types a localized type and a diffuse type. The diffuse type occurs in the prepuberty period arising in the periacetabular region spreading through the ilium frequently invading the hip joint and occasionally involving the sacroiliac joint. The localized type occurs after puberty in the region of the marginal epiphyses usually in the anterior portion of the ilium less often in the posterior portion where there may be invasion of the sacroiliac joints and rarely in the iliac crest or only in the periosteum. Characteristics of features include the absence of mass sequestration and a frequent tendency toward perforation and a marked tendency toward the formation of an abscess in the internal iliac fossa. The abscesses generally gravitate into Scarpa's triangle but may point posteriorly to the sacroiliac joint or laterally to Scarpa's triangle.

The diagnosis of acute osteomyelitis of the ilium often difficult. The difficulty is due to the rarity of

the lesion the frequent severity of the illness the early absence of tenderness to palpation and the fact that the condition may be confused with pyarthrosis of the hip joint. The differential diagnosis between osteomyelitis of the ilium and pyarthrosis of the hip is based on the fact that in the former condition guarded motions of the joint are still possible.

Clinically three types of acute osteomyelitis are seen (1) that in which the lesion is localized to the crest or spine the local findings are definite and the diagnosis is easy (2) that in which the lesion is diffuse occurs usually in the prepuberty period and is associated with both local and general symptoms of infection and (3) that in which there is a profound septicemia with comparatively insignificant local symptoms.

Of the local symptoms the most outstanding is pain. This is usually felt in the hip or in Scarpa's triangle. Tenderness to palpation is usually early in marginal lesions and later in central or diffuse infections. Rectal examination may reveal tenderness not noted externally. Swelling may appear in Scarpa's triangle. The other findings are similar to those in osteomyelitis elsewhere in the body. Early roentgenograms show no changes but may disclose soft tissue swelling. Later a mottling appears and still later an osteosclerosis which usually means an essentially eburnated bone. In chronic cases dense thickening of the bone with possibly bony overgrowth on the external surface is seen.

The treatment depends upon the stage of the disease. In the acute stages it depends upon the location of the lesion. If the lesion is localized to the marginal epiphyses incision and sufficient exposure of the bone for thorough drainage are indicated. Later a calcar bone resection may be necessary. In the diffuse type which is usually seen in children the external table should be exposed and a search for pus made by trephining through the bone above the acetabulum. When pus is present it will be found along the inner table and trephining is a diagnostic procedure. Drainage through the trephine opening is usually recommended but is not satisfactory. If the patient is extremely toxic the abscess should be drained by a superficial reflection of the internal table and the more radical operation performed a few days later when the patient's condition has improved. If the patient's condition permits resection of the ilium should be done at first. The bone should be exposed subperiosteally on both tables to the rectal table and the whole wing of the ilium removed down to the supra-otylor port. If the hip joint is involved as is rarely the case the whole ilium should be resected. Removal of the ilium to the periacetabular region with adequate drainage gives good prospects for complete recovery and regeneration. If the ilium is no more difficult or difficult than the trephining operation it offers the best chance of cure but also for permanent cure. Rectomy is indicated also in the diffuse type which extends to the pelvis and is associated with infection but in the condition the mortality is high with any treatment.



1 The persistent severe pre-operative pain which sometimes caused complete disability for work was completely relieved in some cases and markedly relieved in others. In many of the cases pain persisted during work especially continuous work.

2 The increase in movement of the wrist varied considerably. In all cases motion still remained limited.

3 The loss of the gross power of the hand still persists in all cases. In the three cases in which the results were poorest the condition was attributed to an accident.

According to the theory most generally accepted malacia of the semilunar bone is an occupational rather than a traumatic disease. However, in Sonntag's opinion the possibility that it may result from a single severe trauma cannot be excluded.

The technique of operation is not always very simple when the bone is very soft and the cartilaginous zone is fragile. When the ligamentous apparatus is well preserved, separation of the semilunar and scaphoid bones may be difficult. In a few cases reported in the literature both bones were extirpated together by mistake. However, the result did not appear to have been made worse thereby. Of the cases treated at the Giessen clinic the results were poorest in those in which signs of arthritis deformans were present at the time of the extirpation. However, they often improved in time. The author recommends operative treatment. FAHRT (2)

## FRACTURES AND DISLOCATIONS

Pick H and Bracher M. The Treatment of Dislocation of the Semilunar Bone (Zur Behandlung der Mondknochenverrenkung). *Chir.* 1933 786

Exact information as to the frequency of dislocation of the semilunar bone has not been obtainable heretofore. Whereas Hirsch and Schnek state that this dislocation is the most frequent disorder of the carpus next to fracture of the scaphoid, Wette found that among miners the most frequent disorder of the carpus is necrosis of the semilunar bone.

The diagnosis of dislocation of the semilunar bone is made especially easily by X-ray examination. Nevertheless, even the most recent publications show a large number of neglected cases. It appears therefore that even today the injury is often not recognized. Early diagnosis is very important as it influences the treatment decisively.

As in every dislocation a non-operative reposition is the method of choice. Various methods have been proposed (Hirsch, Clarmont and Schnez, Finsterer and Boehler) and successfully applied. However, while all of these methods yield good results in fresh dislocations, they fail in old cases, i.e. cases in which more than a week has elapsed since the injury. In old cases inflammatory changes have occurred in the capsular apparatus, the cavity has become filled with granulation tissue and under some conditions the semilunar bone has undergone a secondary

rotation. In such cases manual reposition even with the strongest pull will not succeed and because of the difficulty of reducing the semilunar bone by leverage, open reposition also fails to yield a good result.

It was not until Boehler proposed a new procedure making use of his screw apparatus that it became possible to bring the semilunar bone back into its original position by conservative measures. Konjetzny proceeded in a similar manner but opened the carpus from the dorsal side. He too obtained a good result. However, there is a time limit even to these methods. If more than six months have passed since the accident the articular surfaces have become changed by inflammatory deposits so that the semilunar bone no longer fits into its original bed and the ligaments have shrunk extensively. Under such conditions extirpation of the bone is necessary. Boehler is willing to remove the semilunar bone only when there is a disturbance of the median nerve. In the absence of such a disturbance he regards the operation as superfluous. The authors do not agree with Boehler on this point. In operating on an old dislocation of the semilunar bone which had undergone torsion to go degrees, they found the semilunar bone wedged firmly between the other bones. The superficial flexor tendon was shredded in this region and only from 1 to 2 mm thick. Extirpation of the semilunar bone brought about great improvement in the symptoms. This case shows that in addition to the well known disturbances of the median nerve in old dislocations of the semilunar bone there may be injury to the flexor tendons which may easily have serious consequences since at first it causes only vague symptoms that cannot be distinguished from the symptoms of the dislocation of the semilunar bone. If a wearing through or tearing of the tendon has already occurred it is too late for surgical intervention. The authors therefore recommend extirpation of the semilunar bone in every case of dislocation in which reposition is impossible. Removal of the semilunar bone is always of course a mutilating operation but can be avoided if the dislocation is recognized and given suitable treatment early. ZILMER (7)

Jones R W. The Treatment of Fracture and Dislocation of the Spine. *J Bone & Jt.* 1934 130

The author has reviewed eighty cases of fracture of the spine covering a period of four years and has found the results very satisfactory. The treatment consisted of gentle hyperextension opening up the cancellous bone. Jones obtains this hyperextension by placing the patient in the prone position with the lower limbs up to the groin on one table and the head and upper limbs on a slightly higher table so that the body sags between the two points of support. Anesthesia is unnecessary and because of the possibility that a fracture dislocation may be overlooked when the muscles are fully relaxed it is undesirable. After the hyperextension is obtained





# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Gr ko I Tl Errors and Dang rs In Su ge y of  
the Blood Vessels (A s d m G b te de Fehle  
u d Gef b n der Ch rph e der Bl t faesse)  
I est k Cf 1933 lxx 1/1 1 18

The author reports three cases of surgery of the blood vessel

The first case was that of a man thirty six ye rs old. A gunshot injury of the lumbar region vas fol lowed by gradual enlargement of a vein and ele phantiasis of the right leg. The patient did not come for operation until after twelve years. He complained of pain and difficulty in walking. The enlarged veins pulsated and hummed. The author believed an arteriovenous aneurism of the left ili c vessels to be present and performed an operation on the ba is of this diagnosis. Exposure of the large vessels by an extrapentoneal incision apparently revealed an anastomosis between the common iliac artery and vein. When the enlarged vein as ligated above and below the supposed anastomosis the venous pul e ceased. During the d section of the vein from the artery a radiat ng arterial hmo rrhage occurred. The opening in the artery vas sutured and the wound closed and a tampon. At first the postoperati e course was satisfactory, but later septic suppurati on and hmo rrhage occurred and the patient died on the eighteenth day. At autopsy an arteriovenous aneurism bet een the hypoga tric artery and the external iliac ein (not between the common iliac vessels) was found. The author belie es that the cessation of the enous pulse after l gati on of the common iliac vein was due to a quickly developed thrombosis wh ch blocked the arterio enous connection. The arterial bleeding dur g the operation was apparently due to a tear in the artery.

The second case was that of a woman twenty six years old. Obstruction of the external iliac artery by swollen lymph glands was diagno ed as arterial emboli m. An attack of typhoid fever was followed suddenly by pain cyanosis and coldness of the right leg. The external iliac artery and the femoral artery were freed by operation. When the large lymph glands were pushed as de the vessels continued to pulsate. After cl sure of the wound the pain ceased completely and the leg became red and warm.

The th rd case was that f a n man thirty eight years old who de eloped an arterial spasm g gesting an arterial embolism after ection of the stomach for carcinoma. Two weeks after the gastr operation the left leg suddenly became cold and pale and the pulse in the femo al artery could no longer be felt. Operati on revealed only a spastically

contracted artery. The Leriche procedure was followed by recovery. N. P. LERICH (2)

Bezel us G Studies on the Hmo rrhag c Tend ency of the Capillaries of the Skin in Artificial Venous Stasis (St d nueb rd Bl t h t d d r Hautkapilla en b i k n t l be n eser Stauung) l ka m d S nd 933 lxx 25r

The methods used previous to 1928 to determ ne the hmo rrhag c tendency of the capillaries of the skin in artificially induced venous stasis were fa l because the same stasis pressure was not used in all cases. Consequently the effect on the capillaries varied markedly and the results were not com parable. A more suitable method w s therefore sought.

If a uniform stasis pressure vas used in all investigations there would be greater agreement of the results in the disse nt cases. That even under these conditions the agreement is n t perfect was shown by an experiment carried out on an artery of a recently slaughtered steer. After the artery had been filled with water a pressure of 136 c m of water (100 mm Hg) was e erted on the inner side of the arterial wall through an attached tube. As the air pressure was gradually increased in the gl ss container in which the artery was placed the change in the size of the artery was studied. With every stasis pressure there occurred also a compression of the artery with a resulting damming back of the arterial afferent flo w. With the same stasis pressure variations in the degree of the damming back vere produced by variations in the blood press e and the elasticity of the arterial wall. As a consequence the time necessary for the development of maximal stasis in the obstructed area varied al o and with it the effect on the capillaries. It is the fore impossible to elaborate a method of procedu e in wh h the capillaries are subjected to exactly the same pressure in e ery case.

In tests on several hundred individuals w th anastomosis n the pressure and in the duration of stasis a stasis pressure of 80 mm Hg of three minutes duration w s found to be sati sfactory.

As a result of the progressive equalization of pres ure in the vascul r system the capillary pressure in venous stasis becomes just as great as the veno s pressure. Theref re to determine the capillary pressure in veno s stasis a study of the venous pressure under the same conditions is necessary. Measurements of venous pressure sho ed that a pressure of 80 mm Hg is suitable f r test ng the bleeding tendency of the skin capillaries provided the stasis s of short durati on.

It was found that w th sim ltaneo s stasis in both arms the results in the two arms may vary markedly.

The following technique was therefore used

Two blood-pressure cuffs were applied symmetrically to each arm and attached to a common air pump by a T-tube. A pressure of 80 mm Hg was applied for three minutes. If petechia appeared on the dorsal aspect of the arms, this was noted, especially if they were more numerous on the volar aspect. As a rule the hæmorrhages appear predominantly on the volar aspect, especially at the elbow. The reading in this case was made on a circular surface with a diameter of 4 cm at the elbow, where most of the petechie appear. The result is the arithmetical average of the findings in both of the arms.

Tests made in the cases of healthy persons on a diet sufficiently rich in vitamins showed that the borderline between the normal and pathological number of hæmorrhages is between four and five. Because of constitutional variations and physiological differences in the hæmorrhagic tendency, a single moderately abnormal finding is not of much significance. The hæmorrhagic tendency of the skin capillaries also shows physiological variations and depends, among other factors, upon whether hyperæmia of the skin develops during the test or not. Bodily exertion also appears to increase the hæmorrhagic tendency. LOUIS NEUWEIT, M D

Rosen, S. von. A Case of Thrombosis of the Ulnar Artery Caused by the Effects of a Dull Force (Ein Fall von Thrombose in der Arteria ulnaris nach Einwirkung von stumpfer Gewalt). *Acta chirurg Scand*, 1934, lxxiii, 500

The author reports a case of thrombosis of the ulnar artery following a contusion of the hypothenar eminence. The condition caused the hand to ache when it strained during work. The symptoms were entirely relieved by removal of the thrombosed part of the artery and liberation of the ulnar nerve which was adherent to the artery.

Dos Santos, R. Arteriography of Tumors of Bone and of Soft Tissues (L'arteriographie dans les neoplasies des os et des parties molles). *Bull et mem Soc nat de chir*, 1934, lx, 99

The author reports the results of a study of thirty-seven tumors of the extremities by means of arteriography. Arteriography is a method of visualizing the blood supply to a particular region which is suspected to be the site of a morbid process. The contrast medium employed by the author is thorotrast. After the injection, roentgenograms are made at intervals of several seconds. This technique yields information which cannot be obtained from the simple flat plate. By means of it the author is able to distinguish a benign bone tumor from a malignant bone tumor, acute and chronic osteomyelitis, syphilis, and tuberculosis of bone. Malignant bone tumors are usually characterized by a deviation of the main arterial trunk due to the tumor itself, a rich arterial network, and visualization of the venous tributaries in six seconds. A gumma of bone will

show a relative ischæmia. In acute osteomyelitis there is a slight increase in the arterial supply, venous emptying is slower, and there is usually an arteriocapillary stasis.

The technique described has been employed by the author also in the study of the evolution of tumors treated by irradiation.

BENJAMIN B P SHAFIROFF, M D

Roviralta, E. The Treatment of Circulatory Disturbances of the Lower Limbs (El tratamiento de los trastornos circulatorios de los miembros inferiores). *Arch de med, cirug y especial*, 1933, xlv, 1194

The author reviews the literature and the various procedures that have been tried in the treatment of circulatory disturbances of the lower limbs.

Following the work of Silbert, Roviralta injected alcohol into the internal branch of the anterior tibial nerve in the case of a patient suffering from advanced thrombo-angitis obliterans and painful necrotizing ulcer of the big toe. He obtained excellent immediate results, but all of the symptoms recurred at the end of three weeks. The patient had previously been subjected to periarthral sympathectomy of the femoral artery without relief from pain.

Encouraged by the temporary relief which followed the alcohol injection, Roviralta ventured a neurectomy of the anterior tibial nerve of the same patient. This operation had been tried by Quénu many years previously. In the author's case it was followed by immediate relief of the pain and complete healing of the ulcer in a few days. The patient has now been practically symptom free for five years. His only trouble today is an occasional attack of intermittent claudication which is not serious enough to interfere with his work.

In a case of ulcer on the inner border of the foot extirpation of the posterior tibial nerve was followed by complete relief of the pain and practically complete healing of the ulcer, but at the end of a year the pain recurred and the ulceration extended to the dorsum of the big toe. Excision of the anterior tibial nerve was then done and was followed by complete remission of the ulceration and pain. The patient has now been free from symptoms for eighteen months.

The author reviews also three cases of thrombo-angitis obliterans in which neurectomy was performed with marked alleviation of the symptoms. In one of these cases a lumbar ganglionectomy had resulted in only transitory improvement.

Neurectomy was tried also in a few cases of diabetic arteritis. It relieved the pain and increased the temperature of the extremity, but did not arrest gangrene.

In conclusion the author advocates peripheral neurectomy in preference to sympathetic ganglionectomy in the treatment of circulatory disturbances of the lower limbs because of the high mortality and the uncertainty of the results of the latter.

I BIRD-ACOSTA, M D

## BLOOD TRANSFUSION

Scheurer Waldheim F. The Results and Experiences in 500 Blood Transfusions (Ergebnisse und Erfahrungen bei 500 Bluttransfusionen). *Deutsche Zeitschrift für Chirurgie* 1933 cc 13 332

The author describes the technique used for blood transfusion in the Surgical Clinic of the University of Graz.

Every donor receives a certificate with a photograph a duplicate of which is kept in the Clinic. After each transfusion the certificate of the owner is retained for six weeks. The Wassermann reaction is tested every six weeks but the clinical examination is regarded as more important. Hypertonic individuals belonging to Group o are good general donors because of the very low agglutinin content of their serum. The affected arm of the donor must be immobilized for at least twenty-four hours as otherwise thromboses may develop readily. The donor is paid.

The determination of the blood grouping is made by the glass slide method and the hæmotest. Although it is not a question of mass examinations errors have occurred repeatedly. Two blood transfusions were fatal because of group weakening or failure of the hæmotest. Previous to the transfusion a repeated test and an Oehlecker biological test are always necessary. In fact the author demands for the donor an examination of the erythrocytes with a hæmotest and testing of the serum with test blood corpuscles. For the recipient the hæmotest slide examination is sufficient. In a few instances unfavorable reactions have occurred after transfusion but care is necessary in their interpretation. Blood transfusion is contraindicated in all cases of nephritis (or fatality). It is known that exsanguinated individuals sometimes cannot tolerate large amounts of blood. In the case of one such patient severe cardiac collapse with chills occurred. A shock like condition occurred in 2 of the cases reviewed. Chills immediately after the transfusion in 4, an urticaria like exanthem in 3, and an increase in the temperature on the following day in 3. However all of these complications ran a harmless course. The author calls attention to the fact that many of the reported serious reactions which might discredit the procedure will not withstand critical judgment.

In the Surgical Clinic of the University of Graz transfusions have been given in 468 homologous groups and 34 heterologous groups. Of 13 unfavorable reactions 5 occurred in the heterologous groups.

The Percy procedure was used in 49 cases and the Oehlecker method in only 9. The biological preliminary test may nevertheless be done without hesitation. If the donor has well filled veins the venepuncture is done only with Auer needles. However the vein of the recipient is exposed.

In the 403 transfusions which are described in detail complete coagulation occurred 3 times. Very small coagula remain in the efferent opening but the

remaining blood may be transferred to another Percy flask and used. The patients belonged to the following blood groups: Group o 151, Group B 47, and Group AB 12. A tendency of certain blood groups to be associated with certain diseases could not be demonstrated. The indications for the transfusions were as follows:

1. Acute loss of blood due to injuries and spontaneous hemorrhages. Of 28 patients who were given 33 transfusions 20 were cured. It was possible also to stop the source of the bleeding. In many of these cases the transfusion undoubtedly saved life. In every case it was followed by improvement.

2. Postoperative hemorrhages. Twenty 5 x transfusions were given to 23 patients with successful results.

3. Hemorrhages from ulcer and carcinoma. Of 60 patients given 72 transfusions 41 who were given 47 transfusions showed such marked improvement that they could be operated upon from four to twenty-one days later. In the cases of 10 patients who were given 15 transfusions the results were so excellent that operation was not necessary.

4. Hemorrhages from the intestines, urogenital organs or lungs. The source of these spontaneous hemorrhages is often at first doubtful. In the cases in this group transfusion gave good results. Patients with hemorrhages from carcinoma of the intestines, carcinoma of the bladder, hypernephroma, the prostate and ulcerating colitis could be treated symptomatically and some of them could be operated upon successfully later. One case of severe hæmoptysis, 2 cases of severe epistaxis and 5 cases of hæmophilic joint hemorrhages were cured. In the cases of 4 hæmophiliacs the transfusion was life saving.

5. Cholæmic hemorrhages. In contrast to Melchior Montsch and Wittmann the Graz Clinic obtained good results from pre-operative and post-operative transfusions in cases of cholæmic hemorrhages. Repeated large transfusions were given.

6. Chronic loss of blood (secondary anemia). In cases of marked anemia only 1 transfusion of from 200 to 300 ccm is at first indicated. It is of interest that 2 cases of severe dysentery with anemia were also treated successfully.

7. Tumor cachexia. In cases of cachexia due to tumor the transfusions caused marked improvement in the general condition. In the cases of 13 patients they were given pre-operatively with an immediate good result. Transfusion with roentgen treatment had a remarkably beneficial effect but transfusion without simultaneous roentgen therapy was without effect.

8. Postoperative and posttraumatic shock. Although in these conditions there is a loss of vascular tone due to the sympathetic nervous system excellent results were obtained in 12 cases.

9. Delayed convalescence. A good result was obtained in 25 cases. In 6 cases with uræmia there was no result. Blood transfusion requires healthy kidneys.

10 Suppurative infections Of 61 patients with a suppurative infection who were given 94 transfusions, 25 survived Attention is called to the fact that patients in whom the focus could be attacked surgically had the more favorable prognosis It is surprising that children with septic or infectious toxic processes responded better than adults It is noteworthy also that general infections arising in the uterus with thrombophlebitis and pulmonary complications showed good results Four of 8 patients were given repeated large transfusions although hæmolytic streptococci were present in the blood Gangrenous cavities in the lung up to the size of an apple, and even gangrene of the entire right upper lobe healed without intervention The author has found that the bactericidal index is markedly increased by transfusion with resulting immunity However, the transfusion must be given,

not as a last resort, but as soon as possible after the onset of the condition The Graz Clinic has made experiments with immunotransfusion in the stricter sense, that is, the transfusion of donor's blood which has been actively immunized by culture of the excitant of the disease No apparent result was noted The author therefore does not share the unfavorable judgment of other investigators regarding transfusion in suppurative infection

11 Blood diseases The chief blood disease coming up for consideration was pernicious anæmia In 17 patients given 25 blood transfusions for this condition the results were good but transitory

12 Miscellaneous conditions A child with very severe burns and toxicosis was saved by 2 transfusions In a case of erythrodermia exfoliativa and 2 cases of bronchial asthma transfusion had a transitory beneficial effect

FRANZ (Z)



# SURGICAL TECHNIQUE

In the development of ideal anesthesia, technique will be a factor. The Waters carbon-dioxide filtration technique is physiologically ideal. Other factors involved are the prevention of water and heat loss from the lungs, asphyxiation, anoxemia, and the accumulation of carbon dioxide.

In discussing the pre-anesthetic and post-anesthetic care of patients the author points out the deficiencies of the use of morphine, atropin, and scopolamine, and the pre-anesthetic use of the barbiturates. He says that atropin favors post-operative intestinal stasis, and morphine causes stimulation of the central nervous system outlasting the obvious depression. He concludes that there can be no pre-anesthetic or post-anesthetic routine, each patient must be treated individually.

For infiltration and subarachnoid anesthesia he regards procain as best because of the wide margin of safety between its effective and toxic doses. He calls attention to the value of the use of barbitals for the prevention of toxicity from local anesthetics.

In conclusion he says that for the evaluation of drugs the physician should rely on the findings of the Council on Pharmacy and Chemistry of the American Medical Association and the reports of university laboratories.

BENJAMIN G P SHAFIROFF, M D  
 Itherrington-Wilson, W. Intrathecal Nerve-Root Block. Some Contributions and a New Technique. *Proc Roy Soc Med*, Lond, 1934, XXV, 323.

Mock spinal experiments with glass canals serving as spinal cords are ideal for establishing the confidence and judgment required by the spinal anesthetist. In such experiments procaine stained with dye can be seen ascending in the vertical canal which contains a sugar salt solution of the same density as cerebrospinal fluid (1.007). The spinal agent should always be of the same temperature as the fluid receiving it as otherwise it will tend to drop to the sacral canal.

In the technique of inducing spinal anesthesia which is employed by the author the patient is given 1/100 gr of scopolamine one hour before the operation and 1/220 gr half an hour after the first dose. Ten minutes before the injection of the anesthetic he is given 1 1/2 gr of ephedrine. On the operating table he is raised to the sitting position and the anesthetic is introduced into the spinal canal at the level of the third lumbar space. Ten cubic centimeters of 1:1:500 solution of procaine are injected over a period of fifteen seconds. On completion of the injection the patient is kept in the sitting position for twenty seconds and then placed in the dorsal position, first at a slope of 15 degrees for three minutes, and then at a slope of 10 degrees for the duration of the operation.

For operations on the perineum and limbs the zone of anesthesia is low, its upper boundary being the fifth lumbar nerve. For operations on the lower abdomen and pelvis a middle zone of anesthesia bounded above by the tenth thoracic nerve is indi-

cated. For operations to be performed on the upper abdomen and lower thorax, the zone of anesthesia is high, its upper boundary being the fifth thoracic nerve.

For low spinal anesthesia the author injects 10 c cm of the 1:1,500 solution of procaine and keeps the patient in the upright position for twenty seconds. For medium spinal anesthesia he injects 12 c cm of the solution and keeps the patient in the upright position for thirty seconds. For high spinal anesthesia he injects 15 c cm of the solution and keeps the patient in the upright position for forty seconds.

Forty-six operations have been satisfactorily performed with this technique.

BENJAMIN G P SHAFIROFF, M D

Holtermann, C. Evipan-Sodium Anesthesia. A Biological, Not Strictly Schematic Evipan-Sodium Dosage for Full Anesthesia. The Use of Evipan Sodium for the Relief of Pain in Spontaneous Labor. (*Zur Evipan Natrium Narkose Biologische, nicht starr schematische Evipan-Natrium Dosierung zur Vollnarkose, Evipan-Natrium Anwendung zur Schmerzlinderung bei der Spontangeburt*) *München med Wochenschr* 1933, 11, 1547.

Evipan sodium is not an absolutely harmless anesthetic which can be employed for the induction of full anesthesia on every occasion. Parenchymatous changes in the liver constitute a strict contra-indication to its use. Fatalities have followed evipan sodium anesthesia even in cases in which the liver was normal. However, these were doubtless due in part to incorrect dosage. The dosage is most important. The schemes of dosage based on age and body weight are not only unreliable, but dangerous. Because of variations in sensitiveness to evipan sodium of different individuals, there is no scheme of dosage that is entirely reliable. It is much better to establish the amount of evipan sodium necessary to induce non-wakable sleep, which is easily determinable for each individual, and then vary the additional dosage necessary to reach the tolerance dosage according to the expected duration of the operation. The onset of the state of non-wakable sleep is characterized by the onset of snoring respiration, falling of the jaw, and muscular relaxation. The additional dosage amounts to from one half to one and a half times the sleeping dose. For interventions of short duration it is best to keep the additional dosage at the lower level. In more than 1,600 evipan sodium anesthetics for gynecological interventions of short duration sufficient anesthesia was obtained in 85 per cent without serious accident except one death due to an unrecognized hepatitis.

In obstetrics, the dosage is different. On the basis of more than 1,000 observations the author recommends evipan sodium anesthesia for the relief of pain in the passage of the head in spontaneous labor. In the first stage of labor evipan sodium is contra-indicated. There is no clinical evidence of transition

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of the evipan sodium to the child. The administration of from 2.5 to 4 c.c. of evipan sodium produces toward the end of the third stage of labor a wakable sleep with complete amnesia which has little effect on the birth processes and lasts for from ten to twenty minutes. For episiotomy and repair of the perineum the dose may sometimes be increased by effect from this increased dosage on the stage of placental delivery. The author recommends the simultaneous intravenous administration of a preparation of posterior lobe of the pituitary gland with the evipan sodium. However this should be done only when the labor can be terminated quickly.

STUEBEL (G)

Flemmett J L. Subarachnoid Injections of Procaine Hydrochloride. Quantitative Effects of Clinical Doses on Sensory Sympathetic and Motor Nerves. *J Am Med Ass* 1934 c 45

The thirty-four patients whose cases are reported represented both sexes and a wide range of age. In the cases of thirty-one spinal anesthesia was induced with procaine hydrochloride and in the case of one spinal anesthesia was induced with pantocaine. In the cases of two general anesthesia thereafter determined were made of the amount of block produced in the sympathetic sensory and motor nerves by a wide range of doses and concentrations. These determinations are presented graphically and analyzed.

The physiological sequence of nerve blocking in spinal anesthesia was found to be as follows: (1) sensory nerves (2) sympathetic nerves and (3) motor nerves. However it is likely that the sympathetic nerves are the first to be blocked. As the means of measuring sympathetic block is not so direct as the means of measuring the blocked temperature of the areas supplied by the nerves, delay in recording after sensory block. The order of recovery is (1) motor nerves and (2) sensory and sympathetic nerves at about the same time.

Fractious block is shown to be possible. The production of block of one system without block of another by variation of dose and concentration is feasible. Sixty milligrams of procaine has been demonstrated of from 1.5 to 2 per cent has been demonstrated adequate to produce a rise in cutaneous temperature to a level assumed at the present time to indicate complete vasodilatation. Complete anesthesia is not necessary to secure this vasodilatation.

The time required to block all three types of nerves is discussed. A complete sensory effect usually obtained in from four to eight minutes. For practical purposes an interval of thirty minutes after injection should be sufficient to produce a maximal rise in the surface temperature due to block of the sympathetic vasoconstrictor nerves. The time between the injection and the production of

motor block is variable ranging from three to twenty three minutes. All of these figures vary greatly according to the dosage and concentration used.

Backer G and N. Investigations on the Changes in the Spinal Fluid After Spinal Anesthesia. (*Recherches sur le liquide céphalo rachidien après rachisthésie*) *Arch. Hyg. S. d.* 1934 1: 1485

In 138 cases of operation performed under spinal anesthesia spinal punctures were done twenty-four, forty-eight, and seventy-two hours after the operation. At the end of twenty-four hours an increase in the cells of the spinal fluid was found in 6 per cent of the cases but at the end of forty-eight and seventy-two hours an increase was apparent in only 30 and 18 per cent respectively. In some of the cases the anesthetic was a 3 per cent solution of novocain in spinal fluid and in others the 1:5000 solution of procaine to hypotonic salt solution recommended by Jones. An increase in albumin and globulin was found in one-third of the cases but slowly disappeared. An increase in the sugar content of the spinal fluid and blood was found in 60 per cent but an increase in the sugar content of the spinal fluid alone in only 24 per cent.

The largest number of cells was 1,050 per cubic millimeter. In 3 cases more than 500 cells per cubic millimeter were found. The number of cells was lowest in the cases in which procaine was used. It was impossible to ascertain any relation between the increase in the cells and the type of anesthetic used, the age of the patient, the extent of the anesthesia. The frequency of headache depends to only a minor degree on the increase in the cells. Only 1 of the 3 patients with a high cell count had headache. Neither was any relation found between headache and an increase in the albumin, globulin, or sugar.

The hemolytic power of the anesthetic did differ in each case. No relation between it and the headache could be ascertained.

The findings do not explain the occurrence or intensity of post-anesthetic complaints.

Goldschmidt S, Radn I, S. Lucke B, Müller G P and Others. Diethyl Ether Experimental and Clinical Studies. *J Am Med Ass* 1934 c 9

Diethyl ether is an organic compound related to ethylene and ether. It is a volatile liquid which is inflammable and explosive. On exposure to light it decomposes into formic acid and formaldehyde. It has an ethereal odor. As prepared for anesthesia it contains absolute alcohol to prevent chemical decomposition and a substance to prevent them from separating.

This article is based on 46 clinical cases of anesthesia induced with diethyl ether and studies of the effect of this anesthetic on animals. More than 400 of the patients were anesthetized by the regional and general anesthetists. In 90 per cent of the cases the

open-drop method was used. In 10 per cent, the divinyl ether was employed in conjunction with nitrous oxide and oxygen. The ages of the patients ranged from five months to eighty-two years. Fifteen patients were under two years old and 12 were over sixty. The operations were those most frequently performed on a general surgical service.

The first stage of anaesthesia obtained with divinyl ether is very short. Consciousness is lost after the first few inhalations. There follows then a light stage of surgical anaesthesia in which a rhythmical oscillation of the eyeballs occurs. Complete surgical relaxation is obtained which permits surgical procedures that are not excessively prolonged. The excitatory or second stage occurred in only 2 per cent of the cases reviewed. The average time required for relaxation for laparotomy was about three and a half minutes. Of the 461 anaesthetics, only 2 were followed by respiratory complications. In the majority of the cases a mucus discharge occurs during the administration of the anaesthetic and ceases as soon as the administration is stopped.

Cyanosis occurred in only 9 of the cases reviewed. In 461 cases the drop in the blood pressure during the anaesthesia was less than 10 per cent of the pre-anaesthesia level. The anaesthetic was used in all types of cardiac disease without deleterious effect. It was safely administered for a period of two hours and fifty-one minutes. The amount of divinyl ether used was about 2 c cm per minute. Recovery from the anaesthesia was rapid, occurring in from thirty seconds to five minutes. In a case of radical mastectomy with a duration of one hour and twenty minutes, recovery occurred in twenty seconds. Postanaesthetic vomiting occurred in only 9.5 per cent of the cases. Repeated urinalysis failed to show either renal or hepatic damage due to the anaesthetic. In third-stage anaesthesia the average content of divinyl ether in the peripheral blood was 18 mgm per 100 c cm as compared with 132 mgm of di-ethyl ether in the peripheral blood of a patient in the same state of anaesthesia induced with the latter anaesthetic.

Experimentally it was found that death caused by divinyl ether poisoning is usually due to respiratory failure. Artificial resuscitation was effected quickly in all cases. Pathological investigation showed the liver to be the only organ susceptible to the anaesthetic. The type of damage was a central lobular necrosis similar to that caused by chloroform poisoning. This resulted only in dogs anaesthetized for a prolonged period. No liver damage was caused in monkeys anaesthetized under similar conditions.

In conclusion the authors state that, according to their experience, divinyl ether induces rapidly and maintains evenly a surgical anaesthesia with good relaxation from which the patient recovers quickly. It causes no untoward effects on the blood pressure or respiration and its use is followed relatively very seldom by excitement or postanaesthetic vomiting or respiratory complications.

BENJAMIN G. P. SHAFIROFF, M.D.

Stimpfl, A. Is Intravenous Evipan Narcosis Safe?  
(Ist die intravenöse Evipannarkose ungefährlich?)  
*München med Wchnschr*, 1933, 11, 1429

As in the use of all other anaesthetics, there is a certain amount of danger in the use of evipan sodium which must be recognized to be avoided. The author discusses the question as to where the disturbances sometimes associated with evipan-sodium narcosis arise and whether they can be ascribed to the evipan itself. Among the local disturbances are thromboses at the site of the injection. In the author's material at the Tuebingen Gynecological Clinic thromboses have not been observed. The author therefore believes that the use of evipan sodium is associated with less danger of this complication than the use of other anaesthetics which have been injected intravenously for a long time without thought of this sequelae. With regard to the respiratory and circulatory disturbances recorded in the literature, Stimpfl says that the doses given in the cases reported were as a rule relatively too high and the complication might have been avoided by a dosage adapted to the individual case. These disturbances may usually be controlled quickly by coramin, lobelin, cardiazol, carbon dioxide, and artificial respiration.

Eleven cases in which death occurred during evipan narcosis are reviewed. In these cases also the principal factor was overdosage, especially in the presence of sepsis and severe general organic disease.

As the impression was gained that certain disease conditions predispose to complications, an attempt was made to determine the contra-indications to the use of evipan narcosis. Special attention was paid to liver injuries, the supposition being that the drug is broken down chiefly in the liver. Heart injuries and abdominal diseases with involvement of the peritoneum, sepsis, severe cachexia, and affections of the thyroid gland particularly predispose to unfavorable reactions. In most cases of complications, however, a marked circulatory insufficiency was probably present, the patient being therefore already unequal to the demands of evipan-sodium narcosis. A marked fall in the blood pressure was noted repeatedly and may have played an important role. However, in spite of all of these severe disturbances, no absolute contra-indication to the use of evipan sodium, especially for brief and induction narcosis, is recognized. Reduction of the procedure to a rigid formula will lead to disastrous results.

Dosage tables are only approximate. The amount of the evipan sodium solution necessary for complete narcosis can be estimated only during the injection. The most important criteria are dropping of the lower jaw and the onset of deep snoring respiration. When these are noted, 2 or 3 c cm more will usually be sufficient. The less the patient requires up to this stage, the less the additional amount to be injected. The injection must not be given too rapidly.



The author concludes that when used for a brief or induction narcosis and administered slowly with constant observation of the patient and according to the requirements of the particular case a span sodium is relatively safe

**Müller K. O. Percain Anesthesia. A Review of the Use of Percain for Local Anesthesia with Considerations Regarding the Maximal Therapeutic Dose Based on the Known Cases of Poisoning.** (Percainan t h e U b r i c h t a u d i V e n d u n g d e s M i t t e l r u r l i c h e t t e r a b n a n h t U e b l u n g e n u e b d e r h b e k n t g e w o r d e n n V g l u n g f l e) H s p t d 1933 p 83

Like novocain percain produces a prolonged anesthetic effect and a still longer hyperesthesia. In addition it has a definite superficial anesthetic effect. A disadvantage is that it is one of the most toxic of local anesthetics being from two to three times more toxic than cocaine and from fifteen to thirty times more toxic than novocain. On mucous membranes percain is about ten times as effective and on the cornea it is about thirty times as effective as novocain although it is only about two or three times more toxic than the latter. It is easily dissolved in water. Solutions prepared with salt solution are stable and may be sterilized repeatedly by boiling. It is an alkaloidal salt which with an alkaline reaction changes into the only slightly water soluble alkaloid percainum bas cum.

For infiltration anesthesia a 0.05 per cent solution preferably with the addition of adrenalin is employed. For nerve block anesthesia a 0.5 per cent solution which is equivalent to a 1 per cent solution of novocain is used. Adrenalin should always be added as it considerably reduces the toxicity of the percain. The anesthesia lasts for from three to five

hours and the hyperesthesia for from six to ten hours after the injection. Potassium sulphate seems to increase the effect. Experience has demonstrated that percain is excellent for lumbar anesthesia. For this type of anesthesia begins from ten to twenty five minutes after the injection and lasts for from three to four hours. It is followed by a long period of hyperesthesia. As early as from one and a half to two hours after laparotomy strong bowel peristalsis sets in. For sacral and parasacral anesthesia from 40 to 60 mgm should be injected into the paraesthesia. 30 mgm of any anesthesia percain is more satisfactory than novocain on account of its surface action. Cystoscopic examinations and other vesical or ureteral procedures may be undertaken without causing pain after the injection of from 30 to 40 mgm of percain solution with the addition of adrenalin. In dermatology percain is used quite frequently to relieve the pain of ulcer crura and fissures. Combined with menthol it completely relieves itching for a long time in such conditions as pruritus of the anus and vulva and eczema. For these it is employed in ointments.

The reported cases of percain poisoning are discussed. The poisoning is manifested usually by clonic and less frequently by tonic convulsions especially of the limbs and masseters. Respiratory distress is accompanied by opisthotonus. Respiratory disturbances with deep cyanosis are typical phenomena. Death occurs from respiratory paralysis. The pain of the body in which the use of percain seems to be most dangerous are the head, neck and genital region. The maximal therapeutic dose without the addition of adrenalin is probably 1 mgm per kilogram of body weight.

Накорв (2)

# PHYSICOCHEMICAL METHODS IN SURGERY

## RADIUM

Quimby, E. H. The Determination of Dosage for Long Radium or Radon Needles *Am J Roentgenol*, 1934, **xxi**, 74

Since it is necessary to know the distribution of irradiation in the volume of tissue to be treated, methods for determining such information have been developed. Greater difficulties attend the obtaining of such information when interstitial sources of irradiation are used than when external methods are employed. Methods for determining dosages depend upon direct measurements with the use of small ionization chambers, as has been done by Stahel and Mayneord.

The author's information has been obtained by correlating the results of biological and chemical experiments. The determinations were arrived at by the formation of necrosis in rabbit muscle, the production of erythema on human skin, and the bleaching of butter. The results thus obtained agreed very closely with those obtained by the ionization measurements. Previous work was done, for the most part, on tubes not over 2.5 cm long. The object of this work was to obtain data from radium containers of greater lengths. Determinations of irradiation from a radium tube in air have been made. If the tubes were placed in water or tissue, the intensity of irradiation differed from that in air because the absorption of irradiation by the intervening matter decreased the irradiation and because the scattering from the surrounding matter increased it. The comparison of the calculated field for a tube 2.0 cm long and the experimentally determined field for the same tube in water or tissue agreed throughout surprisingly well. The comparisons are illustrated by a figure. A table showing a comparison between the calculated data and the average of the experimental results demonstrates that up to a distance of 2 cm there are no variations as great as 10 per cent. Beyond this point the experimental values become increasingly larger than the calculated values until, at a distance of 4 cm, a discrepancy of 25 per cent is reached. Thus far the experimental values were obtained entirely from the bleaching of butter. The technique of determining the intensities photographically and by ionization is described. On the basis of a comparison between calculated and experimental data for 1.5- and 2.0-cm implants, it was assumed that the calculated data for longer implants would be accurate enough for the first approximation to the distribution in tissue.

Charts are given showing intensities for increasing numbers of needles 1.5, 2.0, and 3.0 cm apart. These charts or the curves constructed from them may be

used to map the field around any combination of needles. Figures for 4.0- and 6.0-cm needles show the variations in intensity with variations in the number and spacing. Planes perpendicular to the needles at their centers and at their ends are shown. Isodoses taper toward the ends of the needles. These figures and curves show the minimum dose delivered within the volume irradiated, which is considered extremely important. As has been shown previously, the erythema dose from a point source at a distance of 1.0 cm is approximately 100 mc-hr. Thus these data are taken as an arbitrary erythema dose. In the charts the numbers represent percentages of this dose, therefore, the percentages of 100 mc-hr at 1.0-cm distance. Hypothetical cases are discussed. With this type of irradiation it is necessary to know what constitutes the necrosing dose. In experiments on rabbits it was determined that 20 erythema doses produce complete necrosis. In the hypothetical cases the area is shown which would receive 20 erythema doses and therefore would undergo necrosis.

The efficiency of various spacings and the most economical arrangement indicated for the delivery of adequate irradiation within a given area are discussed. Thus far the findings indicate that any mass of tissue not more than 3.0 or 4.0 cm in thickness may be adequately irradiated by a series of needles distributed in its central plane parallel to one another and not too widely separated. In very thick lesions the irradiation required per needle would become so large that grave overdosing with consequent necrosis would occur in the central portion of the mass. In such cases it becomes necessary to use two or more planes of needles in parallel lines. The author gives figures showing intensities in various planes with the use of different arrangements of ten 6.0-cm needles. The effects of different spacings and distances of 2.0, 3.0, and 4.0 cm between planes are shown. In general, the needles in a plane should be spaced about as far apart as the distances between two planes of needles. If it seems advisable to irradiate the margins of the mass more strongly than the center, the needles should be closer together than the distance between the planes.

The number of erythema doses delivered by a certain number of millicurie hours with a certain arrangement and, conversely, the number of millicurie hours required to deliver a desired number of erythema doses with the same arrangement are reported. The article includes charts and figures for these computations. Various individual instances with arrangements of needles as carefully computed are discussed. Dosage tables are given for needles from 4.0 to 8.0 cm in length. Doses for specified points in a plane perpendicular to the plane

of the needles and three fourths of the distance from the center to the ends are given for needles 2.0 cm apart 100 mg hr per needle and again with two planes of parallel needles. From this table it is possible to estimate the minimum dose delivered within a volume of tissue by a given number of millicurie hours or to determine how many millicurie hours should be given to deliver the desired dosage. The placing of the series of parallel needles outside and inside of the tumor is discussed. No one method seems to have outstanding advantages over the others. The problem is to give the minimum dosage of irradiation required with minimal necrosis.

The technique of the treatment of carcinoma of the breast by Keynes is taken up and computed by means of the tables. The primary growth under Keynes technique received from 6.4 to 7.4 erythema doses the pectoral 5 major 4 erythema doses and the infra axilla 4.4 erythema doses and the infra clavicular and supraclavicular regions 5 erythema doses. A minimum of 2 erythema doses was given midway between the members of each pair of needles in the intercostal spaces. Therefore under Keynes treatment the primary growth and its surrounding tissues receive from 6 to 8 erythema doses and the pre drainage areas from 4 to 5 erythema doses as a minimum.

In summarizing the author states that the calculated and experimental data regarding the distribution of irradiation around certain radium needles agree. The distribution of irradiation around single needles 4.0, 6.0 and 8.0 cm in length and around certain typical groups of these needles is shown by charts. When a series of needles are placed in a plane parallel with one another and uniformly spaced the addition of needles at one end of the series has very little effect on the dose at the other end. This statement applies also to groups of needles several centimeters from each other. Threshold erythema is taken as a unit of tissue dose. To produce complete necrosis in rabbit muscle 20 erythema doses are required. The same total of milligram hours produces practically the same amount of necrosis whether few or many needles are used.

The proper spacing of needles is discussed. For a single series of parallel needles distances of 1.5 and

2.0 cm are recommended. In two series in parallel planes the needles should never be placed farther apart than the distance between the planes. Since the needles should always be longer than the lesion, the number of millicurie hours required to deliver a specified minimum dose produces about the same amount of necrosis when delivered by any practical arrangement of needles. The arrangement of the needles may be determined by deciding (1) whether it is desirable to avoid trauma by putting the needles in normal tissue, (2) whether it is desirable to avoid the production of necrosis in normal tissue by putting the needles in the lesion, and (3) whether or not the periphery of the lesion and the normal tissue beyond it should receive much heavier irradiation than the interior of the mass. The article contains tables showing practical arrangements of needles by which tissue dosage indicated in specified cases may be determined.

In the discussion of this report CUTLER asked if the mention of 5 or 3 erythema doses meant the amount of irradiation received by the entire tumor mass. Mrs. Quimby answered that it meant that every point received that much and no point received less. Cutler stressed the necessity of sterilizing the periphery of the lesion without over irradiation causing necrosis of the central portions of the tumor masses.

SANTE suggested the use of stronger sources around the periphery and weaker sources in the central portion.

QUIMBY in closing the discussion stated that it is impossible to deliver homogeneous irradiation throughout the entire mass by interstitial irradiation. Her terms refer to minimum dosage delivered within a specified region since that is the dosage which determines whether or not all of the malignant tissue is destroyed. When it is desired to irradiate the periphery to a greater extent than the central portion, the dosage required can be ascertained by consulting the tables. Quimby said that she did not presume to specify dosage as that is the function of the clinician. However, when the dosage has been decided upon, the information contained in the report will enable the clinician to deliver the desired dosage in the most efficient manner.

A. JAMES LARKIN, M.D.

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Moore, H., O'Farrell, W. R., Morfarty, M. A., and Cremin, W. Ultimate History of a Case of Acute Spontaneous Hypoglycemia *Brit. M. J.*, 1934, 1, 2-7

The patient whose case is reported was a woman twenty-seven years of age. When she was first seen she was in coma and the sugar content of the blood was 35 mgm per 100 c cm. Recovery followed the intravenous injection of glucose. The acute hypoglycemia was associated with "amylaceous dyspepsia." This also was treated with a successful result. A mild continuous hypoglycemia persisted, the blood sugar content ranging from 62 to 78 mgm per 100 c cm.

About two and a half years later the patient became comatose for about two hours, but recovered without treatment. Three and a half years later she was re-admitted to the hospital in a comatose condition and died. At that time the blood sugar was 66 mgm per 100 c cm and there was no clinical improvement after glucose therapy.

Autopsy disclosed slight congestion of the liver and bronchopneumonia. The results of biochemical analyses of the liver for glucose and total carbohydrate suggested that the liver was poor in glycogen before death.

The cause of the acute and chronic hypoglycemia was not determined. Hyperinsulinism was considered, but there was very little evidence in favor of this diagnosis. HOWARD L. ALT, M.D.

Moore, H., O'Farrell, W. R., and Headon, M. F. Spontaneous Hypoglycemia with Hepatitis *Brit. M. J.*, 1934, 1, 225

Up to 1931, twenty-four cases of acute spontaneous hypoglycemia were reported. Since then several others have been added. The authors report a case of the condition, discuss the pathogenesis, and consider the relation to it of such factors as insulin, adrenalin, pituitrin, hyperthyroidism, and hormones of the ductless glands. They present evidence indicating that hepatic disease may produce hypoglycemia by interfering with the glycogenic function of the liver.

The case reported was that of a woman forty years of age who was admitted to the hospital in a comatose state. After the blood-sugar content of 20 mgm per 100 c cm had been increased by intravenous glucose therapy, she regained consciousness. Later she became comatose again and died in spite of a normal blood-sugar content. Postmortem examination revealed changes in the liver of the nature of a subacute parenchymatous hepatitis.

Analogies are drawn between this case and the hypoglycemia of hepatectomized dogs reported by Mann and Magath. The authors believe that functional hyperinsulinism may be a cause of hypoglycemia, but conclude that in the case they report the parenchymatous disease of the liver was probably responsible. HOWARD L. ALT, M.D.

Balado, M., Puiggari, M. I., and Alvarado, E. G. Familial Pseudo-Acromegalic Disease of the Skin and Bones (Enfermedad osteocutánea familiar pseudo acromegálica) *Arch. argent. de neurol.*, 1933, 1x, 61

The authors report the occurrence of pseudo-acromegalic disease of the skin and bones in two brothers. A third brother had died of colitis after having had the same disease for several years. The father and mother were first cousins. The father had had syphilis, but the two brothers had a negative Wassermann reaction and the histological picture of their skin lesions was not that of syphilis. The disease was characterized by thickening, wrinkling, and shiny redness of the skin which began on the forehead and extended to the rest of the face. In addition to the subacute inflammatory infiltration of the dermis which caused this appearance there was hypertrophy of the sebaceous glands. The usual chronic inflammations of the skin such as tuberculosis, syphilis, and leprosy could be excluded, although in the beginning the condition somewhat resembled leprosy.

Röntgen examination showed enlargement and clubbing of the ends of the fingers. There were no marked changes of the sella turcica. The anterior and posterior clinoid processes were somewhat thickened, and the bones of the skull seemed to be thicker than normal, but the maxillary bones were not enlarged.

The disease began when the patients were between twenty and thirty years of age and had been developing for years. Apparently it was caused by hyperfunction of the hypophysis.

Röntgen treatment cured the inflammatory infiltration of the skin, but had no effect on the hypertrophied sebaceous glands.

AUDREY GOSS MORGAN, M.D.

Lahey, F. H., and Eckerson, E. B. Presacral Dermoids. *Am. J. Surg.*, 1934, XLIII, 30

Teratomata and dermoids are produced by the complicated embryological development in the formation of the rectum, anus, and caudal end of the spinal cord and its appendages. These tumors occur either in front of, or behind, the sacrum and coccyx. Most of the sinuses and cysts are located posteriorly, where they are known as "pilonidal

**sinuses** The presacral tumors have no connection with bone or the rectum except through pressure. They are more common than is generally believed. The presacral tumors are most frequently located at the tip of the coccyx or between the anus and the coccyx, pain due to pressure on the rectum or pelvic nerves and interference with the action of the lower bowel. They are lined with epithelium which is constantly excreting and undergoing desquamation. They can be cured only by radical extirpation. In three cases reported by the authors the tumor was approached posteriorly by removal of the coccyx and the wound treated as in perineal resection of the rectum. A presacral dermoid should be suspected in the cases of patients with sinuses and abscesses about the anus who have been subjected to repeated operations.

GEORGE A. COLLETT, M.D.

**Schreiner B F and Wehr W H. Primary Malignant Tumors of the Foot. A Report of Thirty Seven Cases. R d 1 27 933 xx 513**

The 37 malignant tumors of the foot reported by the authors were found among 10,350 cases of malignant disease observed in a period of nineteen years. Seventeen were melanomata, 10 of which were far advanced. Treatment of these cases is unsatisfactory. The tumor must be treated early and radically. Pigmented naevi should also be dealt with radically.

Of 8 squamous cell carcinomata 2 occurred at a site where calluses had been treated by X-ray irradiation several years previously. Treatment of plantar warts by irradiation on must not be overdone. Squamous cell carcinoma can be healed if treated by irradiation early. When the lesion is extensive amputation is the treatment of choice. The tumors reviewed included also 4 bone sarcomata, 1 adenocarcinoma and 1 basal cell epithelioma.

H. KAY C. SALTZSTEIN, M.D.

**Schreiner B F. Squamous Cell Carcinoma of the Skin. Am J Ca 1933 1 89**

Two hundred and twenty seven cases of squamous cell cancer of the skin (acanthoma) which were treated prior to 1927 are reviewed. In 14 both types of epithelioma (pearl and basal cell) were present in one lesion. A history of injury was given in 39 cases and a family history of cancer in 27. One hundred and fifty six of the patients were males. A large proportion of the patients were engaged in occupations which exposed them to inclement weather. The cases are divided into 2 groups: those with and those without involvement of bone, cartilage, tendons or lymph glands.

The 156 cases in Group 1, those without involvement of bone, cartilage, tendons or lymph glands, were treated by irradiation. Of the 104 patients who were followed up after five years, 57 (48 per cent) were living and well. Of 44 who died from the progress of the disease, 32 died within two years after the treatment.

Of the 71 cases of Group 2, surgery was used in those with involvement of bones, tendons or extremities and electrocoagulation in those with lesions of the face involving the cartilage of the eyelids or ears. Of 60 patients traced after five years, 4 (6.6 per cent) were well. In the cases which were not completely healed irradiation was of great palliative value.

H. KAY C. SALTZSTEIN, M.D.

**Mirjuško N. Erysipeloid Carcinoma of the Skin. (C. n. m. erysipel des cut.) J. st. k. Chir 1933 1 121 1 23**

The author gives a brief review of the histological and clinical symptoms of the disease which is never called erysipelas carcinomatous. It appears that to date this condition has been observed only in carcinoma of the breast in which it occurs either as an acute or a chronic skin infiltration resembling both erysipelas and an inflammatory carcinomatous invasion.

In the case reported by the author the lesion was located in the chest, but apparently did not arise in the mammary glands. The patient was a man forty years of age who three months previously noticed a small infiltrated red spot in the left axilla. Following the application of ichthyol compresses the spot did not disappear but instead spread over the skin of the chest where it formed sharply protruding zigzag edges. Both breast glands appeared normal. Biopsy revealed an infiltration of small cell and colonies of cancer cells located intracutaneously and subcutaneously. No primary tumor could be detected in the lungs by X-ray examination or in the abdomen. Two series of X-ray irradiations were given. At the end of a year examination revealed no inflammation and only a certain induration of the skin in the previously diseased area and the patient's general condition was good. The author believes that this was a case of primary erysipeloid carcinoma of the skin.

N. PEROV (Z)

**Gram R W. The Prevention of Cancer. L 1 934 cc x**

Cancer appears to be a mysterious disease because of its apparently capricious incidence. In the majority of cases the reason why one of two individuals living under apparently the same conditions develops cancer while the other remains free from it remains unknown. Our ignorance on this point makes it impossible to prevent the disease. Consideration of experimental and statistical data leads to the conclusion that the incidence of cancer cannot be referred to the operation of an extrinsic factor of chronic irritation alone but must be due to the combination of such an external factor and an intrinsic factor of such an extent that the complex nature of the problem is born in the mind. It becomes possible to attack the problem of the external causes those which lead to cancer in man as certain causes, those which are responsible for the greatest number of deaths from cancer. This requires a laborious clinical and etiological

tion of the history of the patients, but is the only possible way to the prevention of cancer

From the point of view of the prevention of cancer, the nature of the intimate cellular changes which transforms the normal cell into a malignant cell may be of much less importance than is generally believed. We are as yet ignorant of the nature of this change although in recent years, as a result of the experimental investigation of cancer, several possibilities have been suggested. However, even a knowledge of this change might not enable us to identify the external conditions which bring it about.

The problem of the incidence and the prevention of cancer has now reached a point where it can be attacked by clinical investigations on man with a reasonable expectation of success.

SAMUEL KAHN, M D

### DUCTLESS GLANDS

Mimpriss, T W, and Butler, R W. A Case of Hyperparathyroidism with Certain Unusual Features. *Brit J Surg*, 1934, **xxi**, 500

The authors report in considerable detail a case of hyperparathyroidism with an associated parathyroid tumor approximately 12 mm in length embedded in the anterior surface of the thymus. The patient was a boy seventeen years of age. The symptoms were pain in the knees causing difficulty in walking, pain in the long bones brought on by pressure, general retardation of growth, and defective mentality.

When the patient was first seen there was no evidence of kidney insufficiency, but this became marked later in the disease. The calcium content of the blood varied between 14 and 18 mgm, and the phosphorus content between 3 and 4 mgm per 100 c cm.

X-ray examination of the bones revealed several areas of decreased density in the metaphyses similar to those of osteitis fibrosa and a well-defined transverse band of increased density in the metaphyses immediately adjacent to the epiphyseal line. The authors suggest that this band of increased density, which has not been previously described as a finding in hyperparathyroidism, may be associated with the presence of active epiphyseal growth. Most of the cases of hyperparathyroidism on record occurred between the ages of thirty and fifty-five years, when the epiphyseal lines were closed.

Excision of the parathyroid tumor in the authors' case was followed by complete recovery. Six months later, X-ray examination of the bones revealed no abnormalities, and the chemical character of the blood was normal. LESTER R. DRAGSTEDT, M D

Hinton, J W, Morton, P C, and Weeks, C. Experimental and Clinical Studies of the Relationship of Thyroid Disease and Pancreatic Function. *Ann Surg*, 1934, **xciv**, 126

The authors report a study of the production of colloid goiter in dogs by ligation of the pancreatic ducts. This ligation is thought to influence protein digestion and hence the supply of tyrosine, it being assumed that thyroxin is formed from absorbed tyrosine. These theoretical considerations are discussed and the technique of the ligation of the pancreatic ducts is described. Histological sections of dog thyroids before and three months after the ligation are shown. Some increase in colloid was evident. Thyroxin decreases colloid, and iodine increases it further. Determinations of tyrosine and tyramine in the blood of patients with low normal and high metabolic rates showed a parallel increase of values with an increase in the metabolic rate.

PAUL STARR, M D

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NOTE.—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

## SURGERY OF THE HEAD AND NECK

### Head

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## SURGERY OF THE NERVOUS SYSTEM

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